

THE IRON AGE

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OCTOBER 12, 1939

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▲▲▲ THE IRON AGE ▲▲▲

OCTOBER 12, 1939

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"Ersatz" and Bombs

WE have heard a good deal about the ingenious development of substitutes; "ersatz" they are called, which Germany has developed. "Ersatz" materials are substitutes for things that a nation has to have to live on or fight on that are not indigenous and therefore likely to be cut off in war time. Rubber is a good example.

While thus far Germany has not developed a substitute for money, her scientists have managed to produce from available components a great many materials, or "ersatz," which money cannot buy now that the blockade is in effect. But it is well to keep in mind that this fact does not solve the war material problem. One can "ersatz" himself into bankruptcy.

Take the case of artificial rubber. We know how to make it. But it is much more costly to produce and to process, measured in man-hours or dollars, than the natural product. The same thing is true of most, if not all, of Germany's substitutes.

If there were only a few materials for which substitutes were required, the situation would not be serious. But in Germany these materials and products are numbered in hundreds. All of which raises Germany's cost levels, both living cost and fighting cost, far above the levels of her adversaries. And cost level has a great deal to do with the outcome of a war just as it has with the outcome of business competition.

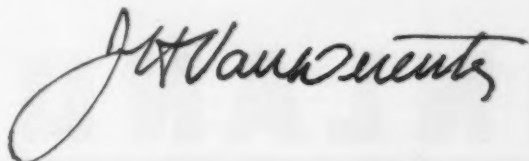
In addition to the necessity of depending upon these "ersatz" materials, Germany, as Ex-President Hoover has just told us, is sadly lacking in many war materials.

"Germany," says Mr. Hoover, "except for coal, potash and nitrates, does not possess a full supply of any essential raw material for war. She has a partial supply of some things, but of probably 20 essential raw materials she has no production at all.

"It is impossible to store up such things for a long war. Her worst shortages are iron ore, rubber, oil, cotton, wool, copper, tin, nickel and hardening alloys. She has in her own synthetic or natural resources possibly one-third of her needs in rubber and oil.

"She cannot obtain outside rubber; she can conceivably secure oil from Russia and Roumania, but not enough to be wholly comfortable in war. In iron ores the Allies already have cut off 25 per cent or 30 per cent of her needs, and full war needs cannot be found in Russia or Central Europe."

If you will keep these facts in mind in reading the unusual article which starts on the following page, you may find the answer to why France and England are content to play a waiting game. "Ersatz" may be more deadly than bombs in the long run!



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The Coming Collapse *of German* *Industry*

• • •
By FELIX BEYER
• • •

EDITOR'S NOTE — *A German economist whose family includes persons now prominent in Germany here gives his own viewpoint on the ability of the Reich's industry to withstand a long war. This story, uncensored and carrying his pen name to relieve members of his family still in Germany from embarrassment, was written following his arrival from Berlin several weeks ago.*

• • •

WILL some section of the German people, its army, church, or industry revolt against Hitler during the first year of the new European war? That is unlikely because most of the people of Germany cannot see the advantage to them of such a revolt. They know that Germany can be compared with a ship

with a crazy man for a captain. The crew, among whom are the millions of German people hating and fearing Herr Hitler, would like to intern the crazy captain in his cabin but there is no use trying that. Here is the reason. The ship has been in a bad storm and its rudder is smashed. A navigator no longer matters. If the captain were sane it would not matter. Nobody can steer with the rudder smashed. No regime, Herr Hitler's or another, can solve Germany's economic and political problems except through a settlement of all major problems of Europe at the same time.

The German of today must ask himself these questions: Suppose the army officers led a revolt against the Hitler regime; would a military dictatorship be better than the present regime? Would there be any more profits, clothes to wear or food to eat? Would there be any more of what the democ-

racies call freedom? The answers to these questions are "no" and the conclusion is "Why revolt?"

What German Industry Faces

Clearly the business man in Germany, who today must consider himself largely an employee of the state, subject always to the whims of an overwhelming political bureaucracy, can do nothing to bring about a change. He sees German industry already in an impossible situation, with the new European war only started. Its superb industrial equipment lacks raw materials and is declining in efficiency because of many factors, each vital, each seemingly impossible of solution and removal, and each capable in the end of bringing about the collapse of Germany's industrial system.

First, the withdrawal of skilled men from industry for service in the army,

which is relatively new and lacking in large numbers of skilled officers, has hampered industrial production at a time when Herr Hitler is demanding still greater output.

Second, Germany faces a shortage of everything except coal which forms its greatest single natural resource. It is short of iron ore and machinery, short of fuel oil, short of copper, wheat, cotton and of numerous strategic materials which might cause a fatal gap in the country's industrial system.

Third, the Reich's workmen are al-

ready tired and production per man of nearly every manufactured or raw material is steadily declining. Poor food is lessening the German worker's efficiency. German workers are older, on an average, than workers in many other countries because the continued maintenance of a large army has drawn off the younger men. In the coal mines, particularly, production per man has fallen.

Fourth, German industry is already suffering from what might be termed an "involuntary sabotage." The hope-

lessness of life in the Reich has stiffened the hands of workmen in factories and on farms and, despite the utmost pressure from Nazi district leaders and the Gestapo, production of most articles lags behind consumption.

Fifth, the necessity of developing "ersatz" substances to make up the Reich's deficiencies of many raw materials, has thrown an intolerable burden on industry and has lifted costs of production to absurdly uneconomic heights.

For these and other reasons, Germans who see the fatal circle in which their industry is whirling, are predicting the complete collapse of this industry within four to eight months. Germany's foes may know this and may be holding off costly attacks upon the Reich in anticipation of such a collapse. I do not know. Whether Herr Hitler will be destroyed from within when the industrial collapse comes, I doubt. There is no one else to lead.

The circle around which German economy is racing goes ever faster. The use of inferior or substitute raw materials lifts industry's costs. Then the government must rush in with state subsidies. To make these subsidies, the government thereupon must obtain forced loans from other parts of industries or resort to the issuance of fiat money. These forced loans and fiat money lead to inflation which means higher prices, which means more subsidies, which results in more forced loans and fiat money so that the public debt in Germany has already reached the dimensions existing in the last month of the 1914-1918 war.

U. S. Business Man Should Know

BUSINESS men in America who have had to keep their heads above water in recent years with the weight of a large political bureaucracy added to his other problems will understand to some degree the burden under which the business man in Germany is groaning.

But American industry has had only a taste of what government hamstringing can be. It knows very little of the immense difficulties of doing business in a state like Germany. In German industry politics is everything. Each step which a business man takes must be approved by a Nazi party leader who often is entirely unfamiliar with the particular situation in which the business leader finds himself, whether it is shortage of material or of new-equipment needed to meet mounting costs which the present German economy entails.

IMPORTS BY GERMAN INDUSTRY

	1937	1938
Iron ore	\$89,202,000	\$113,045,000
Other ores and slags	90,830,000	94,373,000
Copper*	49,210,000	59,228,000
Chemicals, crude and manufactured	66,450,000	61,876,000
Non-ferrous metals, except copper and tin	53,356,000	48,889,000
Gasoline and benzine	35,164,000	41,961,000
Iron and steel	33,241,000	39,183,000
Steel scrap	12,992,000	20,401,000
Machinery, electrical	6,459,000	6,166,000
Other machinery	10,301,000	14,686,000
Petroleum	10,159,000	10,863,000
Gas and fuel oil	24,790,000	33,517,000
Coal	24,341,000	27,190,000
Tin	12,072,000	10,943,000
All imports, including above	\$2,198,506,000	\$2,188,657,000

*187,304 tons in 1937 and 300,269 tons in 1938.

GERMAN IMPORTS FROM POLAND

(From the U. S. Department of Commerce)

	1937	1938
Zinc	\$2,156,000	\$2,167,000
Coal tar derivatives	1,339,000	1,358,000
Iron bars and shapes	474,000	723,000
Steel plates and sheets	211,000	595,000
Railroad materials	298,000	716,000
Coal	23,000	1,284,000
Copper	0	0
Pig iron	130,000	123,000
Lead	0	0
All imports from Poland*	\$27,274,000	\$38,392,000

*Includes approximately \$23,000,000 of food products and \$6,384,000 of lumber in 1938.

GERMAN IMPORTS FROM RUSSIA

(From the U. S. Department of Commerce)

	1937	1938
Gasoline and lubricants	\$6,027,000	\$1,921,000
Phosphate rock	628,000	1,267,000
Manganese ore	1,178,000	1,161,000
Industrial oils and fats	243,000	511,000
Raw chemicals	121,000	112,000
Machine tools	0	0
Copper	0	0
Zinc	0	0
Steel scrap	0	0
Lead	0	0
Misc. ores	0	0
All imports from Russia*	\$26,189,000	\$19,036,000

*Includes lumber, \$5,495,000 in 1937 and \$7,647,000 in 1938.

Likewise the workers are helpless. Since the employer is struggling between state-fixed wage rates and state-fixed prices, it does the German steel worker no good even to think about demanding a wage increase, regardless of living costs. The employer doesn't have the margin necessary to increase wages. He doesn't need to worry about wages, because he can do nothing about them. His biggest worry is the politician whom he must strive constantly to please, whether it is to lift production to greater heights or find the money to subscribe to the government's forced loans ordered to help some other industry which is in even worse circumstances than his own.

Nazi Leaders' Difficulties Grow

You can see that the morale of the average German of today, whether he is a business man or a workman, or a farmer, is unbelievably low in comparison with the morale of the average German of 1914. Then his lot was relatively happy, his sacrifices to the government not unreasonable and the "living space for his soul" not hopelessly limited. Then there were not the shortages of today, at least not until the later years of the war.

Taken one by one the difficulties in which Herr Hitler finds himself are growing. The advantages he now has, such as the trade pact and reported military alliance with Soviet Russia, are frequently illusory. It seems that the likelihood that Herr Hitler can win a long war is reduced in propor-

tion to its length. Demands of the army, for example, on the civilian population, have been great. For several years it has been necessary to keep a large army of men out of industry and fully prepared at a moment's notice to back up the Fuehrer's political and economic adventures with force. There is in Germany, as a consequence, a distinct shortage of skilled

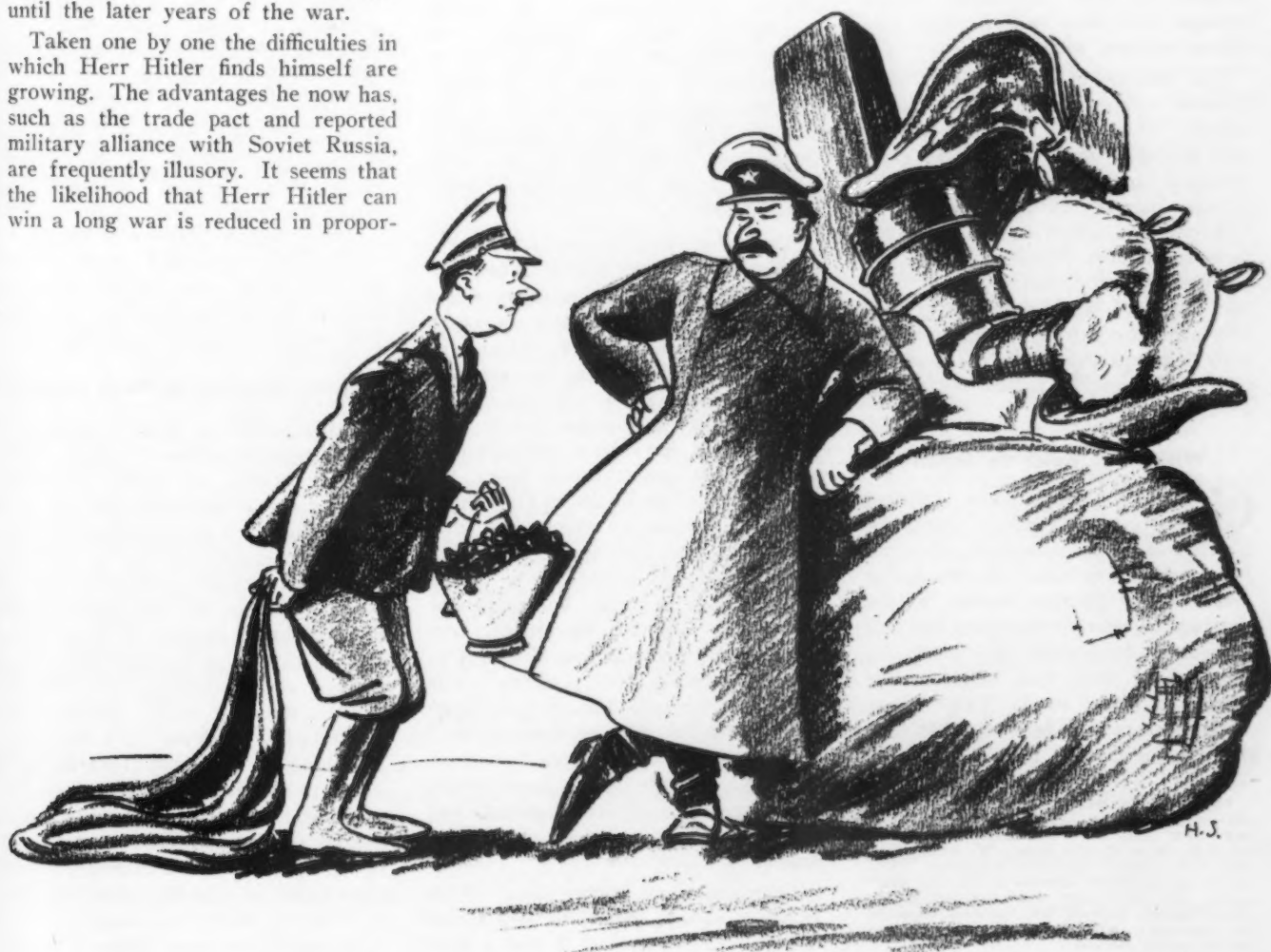
workmen. The army, which is itself so highly mechanized, has drawn off many of the best mechanics, the result being a reduction in the efficiency of what still may be called "private" industry.

Productivity of Worker Declines

At the same time the necessity of maintaining a large force in arms has

EXPORTS BY GERMAN INDUSTRY

	1937	1938
Iron and steel	\$247,436,000	\$222,992,000
Machinery	171,259,000	182,533,000
Chemicals, advanced	120,477,000	104,572,000
Machinery, elect.	104,901,000	105,861,000
Machine tools	84,078,000	81,751,000
Automobiles	50,733,000	53,582,000
Other vehicles	41,967,000	49,613,000
Textile machinery	52,311,000	43,171,000
Copper	64,682,000	51,489,000
Instruments, scientific	46,841,000	47,630,000
Coal tar dyes	59,609,000	43,825,000
Other dyes	24,024,000	20,572,000
Chemicals, crude	21,458,000	19,833,000
Vessels	34,251,000	32,993,000
Non-ferrous metals, excluding copper	26,616,000	27,851,000
All exports, including above	\$2,376,428,000	\$2,111,399,000



lengthened the hours of work for the civilian population and has reduced their opportunities for rest and recreation. The increase in industrial accidents and sickness has been marked. That productivity per workman should decline under such a situation is only natural. However hardy and docile, however great the traditional love of the German people for a disciplined existence in which their lives are directed by the state, the hard working conditions under the Hitler regime have reduced production in many industries. What is the use of working hard, many Germans ask? "Herr Hitler will only ask us to work harder. He has already gotten us into a war so that he would have an excuse to issue us food cards."

At first the German sense of humor was sufficient to overcome the inconvenience and discomfort of wearing, eating and otherwise using "ersatz" materials. They knew armor plate cannot be "ersatz" or shells from the French 75's would go right through it. But after a few years of "ersatz" living, now worsened by the British blockade for peace, the will of the German people (of any people regardless of their patriotism) grows stronger and their will to fight and starve becomes weaker.

The increase in costs imposed on a German industry required to manufacture "ersatz" or substitute materials is staggering. Not even the great technical knowledge and enterprise of German industry have been enough to overcome the added costs of making these substitutes. Artificial rubber can be made but the cost is great. The man-hours of work required to produce synthetic gasoline is, for instance, beyond comparison with the costs of taking oil made by nature out of the ground.

What Has Reich to Trade

GERMAN people are running short of "hope," a condition which will be demonstrated when the Allies are able to inflict the first major defeat on the German armies, but the shortage of nearly everything but coal is equally dangerous. To meet this shortage of most raw materials the Soviet is likely to do little. Many commentators on foreign affairs in the United States marveled at the

(*) That the Soviet government leaders also acknowledge Germany's inability to pay now for raw materials from the U.S.S.R. was shown Sept. 28 when Foreign Commissar Molotov declared: "The Soviet government agrees to furnish Germany all necessary raw materials, for which Soviet Russia will be compensated by Germany with goods delivered over an extensive period."

PRODUCTION OF IRON ORE

	Metric tons	
	GERMANY	POLAND
1913**	28,607,903	464,000
1931	2,580,020	280,170
1932	1,318,673	75,787
1933	2,551,185	158,131
1934	4,274,600	243,469
1935	5,948,819	327,074
1936	7,450,787	461,614
1937	8,388,050	763,780
1938*	10,969,773	

*Including Austria's output.

**Includes Lorraine and Luxemburg.

PRODUCTION OF COAL

	GERMANY
1913	190,109,440
1931	118,640,113
1932	104,040,540
1933	109,920,682
1934	125,010,766
1935*	143,014,941
1936	158,380,003

*Including 9 months production from Saar.

practicality of the deal between the Soviet and Germany. A highly mechanized nation, Germany, was making an agreement to provide its manufactured products in exchange for the raw materials which a less industrialized country, Russia, had in abundance. What could be more natural? It was a "marriage of great possibilities."

Yet what has Germany to offer Soviet in exchange for its wheat, its cotton, its iron ore, its manganese and the long list of vital materials which the U.S.S.R. produces. (*) Herr Hitler has no gold. He has no excess of machinery. When I left Berlin, the purchaser of any power-driven machine would have been compelled to wait a year, perhaps two years, for its delivery. The strain on Germany's industry is now so great that little machinery can be exported. Instead German industry would like to import machinery, if it could. Russia cannot count on German machinery, any more than it can count on Germany to provide manufactured products. Germany has, it can be shown, a shortage of almost everything except coal which, of course, it hopes to sell to neutrals. Already it has been forced to ration scores of raw materials and finished products and the war has only begun.

Germany could export some of its technical men to Russia to help develop Soviet industry, if it had a sur-

plus of technical men. Do you believe it is likely that German industry, already fighting for higher production against obstacles, could spare any technical men? When the situation in which the Reich's industry finds itself is studied, even superficially, that question answers itself.

Stalin's Victory Was Political

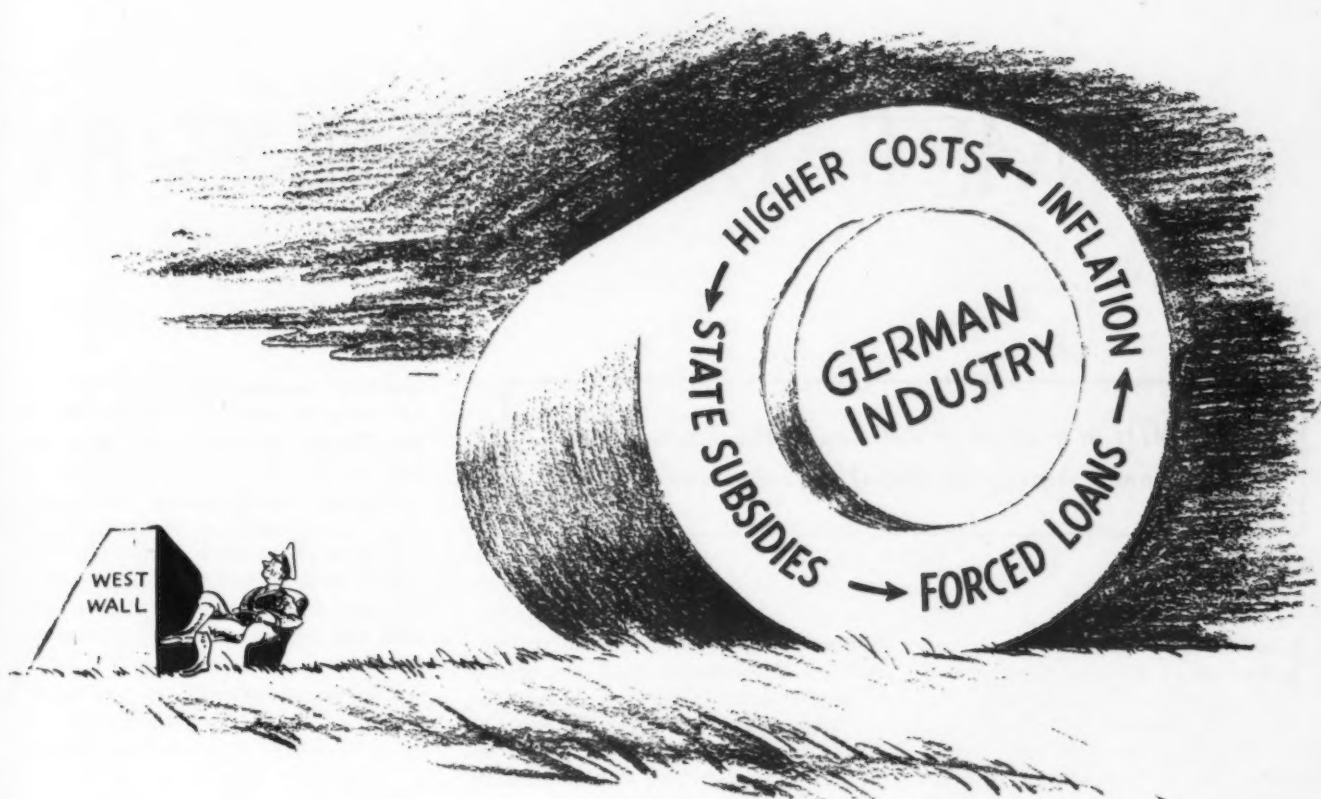
Stalin can expect no assistance in the way of highly skilled technical men from the Reich. From a study of the Reich's needs and its ability to pay for what it needs, it can be shown that Stalin will have difficulties in getting anything out of Germany that the Soviet requires. Stalin's victory in the Soviet-German trade and military agreements was more political (an opportunity to spread Communism) than economic and the Soviet is unlikely to have the delusion that it can be paid for providing supplies of wheat, cotton and other commodities in the quantities needed by the Nazi government. Stalin needed Hitler less than Hitler needed Stalin and the fact that Herr Hitler was driven to giving up half of conquered Poland to the Soviet and to make other concessions which, so far, are only hinted at, is evidence of Hitler's weakness. And the point of greatest weakness in Germany today is industry.

Nothing was more potent in spurring Herr Hitler to start a war than discouraging reports of his statisticians that German industry had reached a peak of productivity in 1937 and then began (after a standstill) a decline from this peak which, if continued, might soon bring economic collapse to Germany. This condition Herr Hitler sought to mask by war.

Exports Declines as War Nears

During 1938 the Reich's export picture, despite an effort to win trade by force, threats of force, bartering, blocked marks and other devices, was darkening. Out of a total of 62 leading commodities exported by Germany 54 showed declines from 1937 and only eight products showed gains. The eight included exports of non-ferrous metals, electric wire and cable, automobiles and machinery. Machine tool exports declined sharply during 1938 as did exports of coal and chemicals. All along the economic front the Nazi effort to expand its foreign trade was meeting failure and making enemies. Nearly every South American country is now loaded with worthless aski marks and rues the day when it started trading with Hitler Germany.

At the same time Hitler's efforts



to make Germany completely self-sustaining were making no great progress and out of 65 products imported 31, including copper, iron ore and gasoline, were brought into the Reich in greater quantities in 1938 than in 1937.

Despite the success of German industry in developing ersatz materials and in collecting and utilizing every usable article, such as the iron fences in cemeteries and in Berlin's back yards, Herr Hitler at the beginning of 1939 found himself short of almost every raw material. Expansion of German territory has not been sufficient to offset this raw material deficiency. While the Fuehrer overran Poland, including upper Silesia, and seized its industries and resources, French troops and French guns already had halted production in Saarland, a region whose

industry is much more important than all of Poland's. The Saar's steel capacity is greater than Poland's and its mines, although having a much smaller capacity than Poland's mines, produce the best coal in Germany and a fuel highly superior to that produced anywhere in Poland.

Industry Loses Weight, Politics Gain

ALWAYS Germans have been envious of foreign oil fields. Oil means more now than ever before. Germans were disappointed to learn the fleeing Poles had dynamited the Galician oil wells. Each time a German farmer sees a warplane flying overhead, he says to himself, "There goes my pork and potatoes." What he says is literally true. To improve its gasoline the German government has been forced to use alcohol made

from potatoes. Since the potato is the chief food for hogs in Germany, the hog goes hungry because the plane must have "jacked-up" gasoline. Because the hog must go hungry, there are fewer hogs and less pork for the German farmer's table. Thus the German does not always say "Sieg Heil" when he sees a fleet of bombers. Frequently the German farmer has another grudge against the bombers because the building of military airfields and superhighways throughout Germany has taken thousands of acres out of cultivation, so that the Reich farmers produce less food for civilians as well as for Hitler's army. This does not mean that there is less food for Nazi party leaders who can grow fat as the German industrial machine has grown thin for lack of raw materials.

Interceptions of Reich-Bound Materials by British Fleet

(In tons as reported by British Ministry of Information)

Reported	Iron Ore	Petroleum	Manganese Ore	Phosphates	Aluminum Ore	Molybdenum concentrates	Wolframite
Sept. 9	29,750	28,500	4,600				
Sept. 16	20,000	20,000	25,700	10,000	15,500	400	160
Sept. 26	23,150	14,200	7,200		6,000		

METAL CLEANING BY

SEVENTH in a Series of Articles on the Technical and Economic Aspects of Metal Cleaning and Finishing

BATCH methods applied to production of machine elements in the process of manufacture is fast becoming obsolete. Wherever possible continuous methods are being adopted. This is particularly true in plants operating on a mass production basis—nor has it been found decidedly detrimental in handling small production orders.

In the case of metal washing there can and does exist a very broad variety of patterns which can be handled through the washer in a continuous stream without the necessity for change in the equipment. Usually, therefore, a washing machine can be obtained, even for the very small plant, which will solve the metal washing problem in a satisfactory manner.

The deciding factor in the purchase of this type of equipment is labor cost of a productive nature. For instance

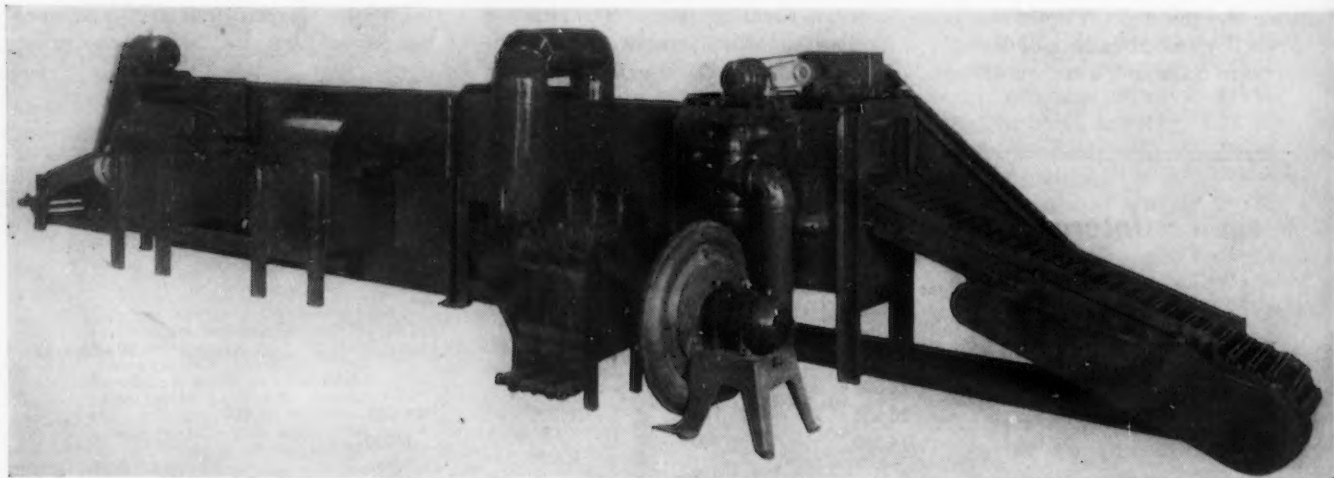
* Technical director, Magnus Chemical Co., Garwood, N. J.

a plant having a productive labor payroll of \$100,000 per year can afford to invest up to \$1,500 in a mechanical washing machine if by so doing the productive labor cost can be reduced $\frac{1}{2}$ per cent. Or, look at the problem from a nearer viewpoint. As an example, take the washing of the roller races for a ball bearing having an outside diameter of 4 in. Each of these races weigh 1 lb. Hand washing on a piece-work basis showed a cost of 10c. per 100 lb. Machine washing showed a production of 8000 lb. per hr. Hand washing these 8000 pieces would equal \$8. Machine washing, using conveyors on which the parts were placed by the grinder operators and conveyed directly through the mechanical washer, showed 100 per cent elimination of the productive labor for washing. True, there was a charge for power, washing compound in excess of that used by hand washing, cost for maintenance of the equipment, and charge for heating the

washing solution; however, these all told equaled only a small fraction of that \$8 per hr. productive labor saving.

Machine washing may be divided into four classifications according to the type of machine used: (1) The splash method; (2) the spray method; (3) the continuous feed spray method; and (4) the continuous feed drum method.

The splash method involves paddle wheels and similar mechanisms to wash the parts. The washing solution is preferably used hot, up to 180 deg. F., and a very good washing job usually results. The method is somewhat slower than when using spray heads supplied with the washing solution at relatively high pressures, say 20 to 50 lb. per sq. in., but, some troubles encountered with spray nozzles are not present in the splash machine. Because of the use of paddles there is nothing to clog up in the water passage, and solids which would throw the spray machine out of commission do not bother the splash machine at all. On the other hand the tendency with the splash machine is to use the solution with too much solid matter in suspension, resulting in an inferior job of cleaning. With proper knowledge of its limitations, advantages and disadvantages, the owner of a splash



WASHING MACHINE ♦ ♦ ♦

machine can do work highly satisfactory and save money on his cleaning.

Fig. 1 shows a washing machine of the splash type. It possesses all the elements of modern design, can be equipped with moving conveyors, uses heated solution where advisable, is equipped with ventilation, is well housed to prevent sloppy working conditions usually considered unhealthy and in general constitutes a very excellent piece of equipment. In Fig. 2 is shown the rotating drum head used in some splash machines. It is obvious that nothing can stop this head from doing its work except a failure of power, which, by the way, is slightly higher than for the same capacity spray head machine.

Spray washers are very widely used. Except for the trouble of stoppage of the nozzles by foreign matter held in suspension, they perform admirably, are low in maintenance cost, low in operation cost and require practically no attendant labor of a productive class when equipped with through conveyor. Since most of these types of machines are equipped with conveyors they will be considered at some length.

In Fig. 3 is shown a very large washing operation carried on at the plant of Edward G. Budd Mfg. Co., Philadelphia. The washing machine, which is 8 ft. wide and has an inside

height of 16 ft., is provided with a washing compartment 8 ft. in length, a rinse section 10 ft. long, a dead space 8 ft. long followed by a second rinse section 10 ft. long, a drying section 20 ft. long, which is followed by the paint spray section.

An overhead trolley conveyor passes through the entire washer and paint section. This trolley conveyor operates at a speed of 6.6 ft. per min. and is provided with a variable speed transmission capable of increasing the speed to 9 ft. per min. The wash section is equipped with 120 spray heads in 8 rows with 15 heads in each row, four rows on each side of the section. Washing solution is supplied to the spray heads by a 6 in. Goulds single stage centrifugal pump, directly connected to a 25 hp., 440 volt, 3 phase, 60 cycle, 900 r.p.m. electric motor working at a pressure of 25 lb. per sq. in.

After installing this system considerable trouble was encountered due to lint from the parts plugging up the nozzles of the spray pipes. This trouble was entirely eliminated by the installation of a Cuno Engineering Corp. filter on the discharge line from the pump. This was done on the wash solution only; however, a similar installation is under consideration for the rinse section.

By C. C. HERMANN and
R. W. MITCHELL*

o o o

The wash tank holds 2200 gal. of solution and 150 lb. of non-foaming washing powder is added every 7½ hr. The temperature of the wash is kept at 170 deg. F. constant by a steam coil supplied with live steam at 100 lb. gage pressure reduced to 15 lb. gage by a reducing valve. The rinse water is kept at a temperature of 150 to 160 deg. F. and the drying section is held at a temperature of from 230 to 250 deg. F.

The material passed through the unit consists of all side frame bars for truck bodies prior to assembly. These parts come to the washer with a very heavy coating of drawing compound. The weight of material put through the system is 1500 lb. per min. at a conveyor speed of 6.6 ft. per min. and upwards of 2000 lb. at a conveyor speed of 9 ft. per min. The material comes to the paint position exceptionally clean and dry providing a very excellent paint surface.

At the plant of SKF Industries, Inc., located in Philadelphia, manufacturers of anti-friction bearings, considerable washing of parts in process is done. All washing takes place in washing machines operating on the batch principle as well as continuous conveyor handling through the washer. There is also a solvent degreasing machine in use.

Cleaning of parts here is done for several reasons and to obtain benefits dependent on the stage of manufacture. For example in the heat treating department all bearing races pass through the heat treating furnaces into automatic quenching machines. The parts then go by way of a conveyor belt to the washing operation for the

AT LEFT

FIG. 1—Wash, rinse and dryer of a paddle type of washer. Courtesy G. S. Blakeslee & Co.

o o o

AT RIGHT

FIG. 2—Rotating drum head used in some splash machines.

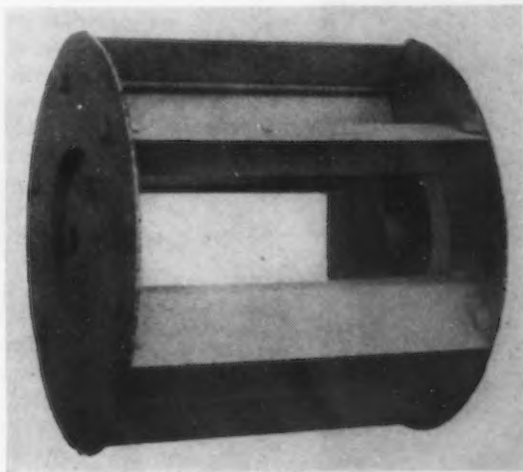




FIG. 3—Very large washing operation carried on at the E. G. Budd Mfg. Co.



FIG. 4—Dumping parts into a tumblast machine for blast cleaning.

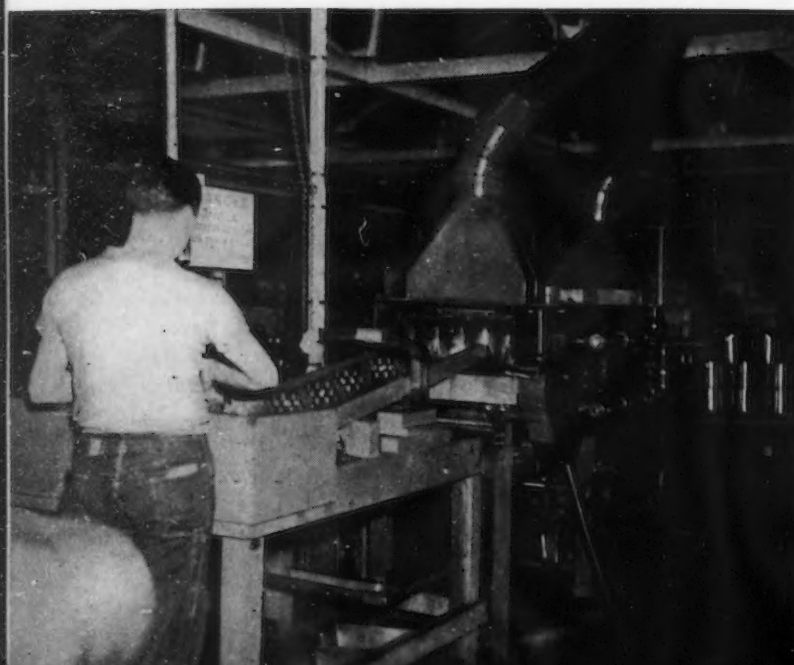


FIG. 5—Last cleaning before polishing of parts at SKF plant.

removal of the quenching oil. The washing solution contains 2 oz. soda per gal. of water kept at a temperature of 150 deg. F. This cleaning is necessary because the parts then go into electric tempering furnaces where the quenching oil, if left on the parts, would cause carbonization of the heating elements. This operation consists of the handling of 8000 lb. of material per hour.

Here also is an efficient handling device for moving the parts between operations. The heat treating furnaces are of the thoroughfare type the finished parts going from the furnace direct into the oil bath where they land on to a conveyor which permits draining before the parts reach a cross conveyor leading to the washing machine. The transfer of the parts from the cross conveyor to the washing machine conveyor is accomplished by having the conveyors on different levels. The parts come off the wash machine conveyor into a chute falling into an alloy basket used in the electric tempering furnace. This basket holds 600 to 800 lb. of material and when full is picked up by an electric hoist operating on an overhead trolley by which the basket is lowered into the furnace. The basket is again picked out of the furnace by the same hoist, at the end of the tempering period, and set on the floor in front of a tumblast machine into which the parts are dumped, when cool, for blast cleaning. This latter operation is shown in Fig. 4.

Subsequent washing operations on the parts, of which there are six, follow machining and assembling operations, and are for the purpose of cleaning off the oil and grease to enable proper inspections to be made as well as to remove compounds subsequent to finishing operations. For instance the operation shown in Fig. 5 follows the grinding and precedes the polishing operation. The grinding is done on machines equipped with magnetic chucks, therefore a demagnetizer coil is used encircling the belt conveyor on which the parts must travel to the washing machine conveyor. This results in demagnetizing the parts and makes possible the thorough cleaning. The solution used in the washer is 12 gal. paraffin, 2 gal. emulsifying agent and 122 gal. water at a temperature of 160 deg. F. The capacity of this equipment is 1000 lb. per hr. The time required to pass through the washer is approximately 30 sec. The conveyor speed is adjustable and since the next operation is polish the parts are air blown to facilitate drying.

Prior to going into parts storage, from which place all parts are drawn for the assembly, the parts must be given a final inspection for finish. This inspection cannot be thorough unless the parts are clean of all polishing compound consisting of number 220 grit and tallow as the principle ingredients. A degreaser is used for this cleaning operation having 17 baskets on a conveyor, each basket holding 50 lb. and requiring 10 min. for a complete cleaning cycle. The machine is shown in Fig. 6. The solvent used is tri-chlorethylene which possesses a good solvent action, is not a fire hazard and permits the parts to come out with sufficient protection to resist oxidation for a short period of time.

To prepare the parts for parts storage they are again washed through a machine, shown in Fig. 7, supplied with a through conveyor. This wash is made of 14 gal. paraffin, 6 gal. emulsifying agent and 178 gal. of water. The solution is heated to 170 deg. F. Following the washing operation the parts pass through a dryer 20 ft. long and at the exit end of this dryer they are air blown to remove the last trace of water. Some moisture remains, however, on the bottom surface of the part where it lays on the conveyor and to remove this moisture prior to the oil spray they pass over a heating plate supplied with electric heating elements. This plate is 18 in. square and kept at 250 deg. F.

When the parts come out of parts storage the oil film must be removed by a washing operation, shown in Fig. 8, the washing solution being made with 45 gal. mineral seal oil, 5 gal. emulsifying agent and 400 gal. water. This solution is heated to 160 deg. F. The capacity of this washer is 4000 lb. of product per hr. The parts now go to the assembly benches where they are assembled into complete bearings.

Prior to packaging for shipment the assembled bearing must be washed and inspected. This cleaning is done in two stages the difference between them being that the cleaning solution in the final stage is passed through a De-Laval separator before being used a second time to insure that the solution is free from all solids which might be deposited on the bearings and result in an inferior wearing product. The final washing operation involves a solution of 100 per cent mineral seal oil. Following the final inspection the bearings are greased, wrapped in oil paper and packed in individual paper cartons.

FIG. 6 — The solvent in this cleaning machine cleans well and gives parts sufficient protection to resist oxidation for a short time.

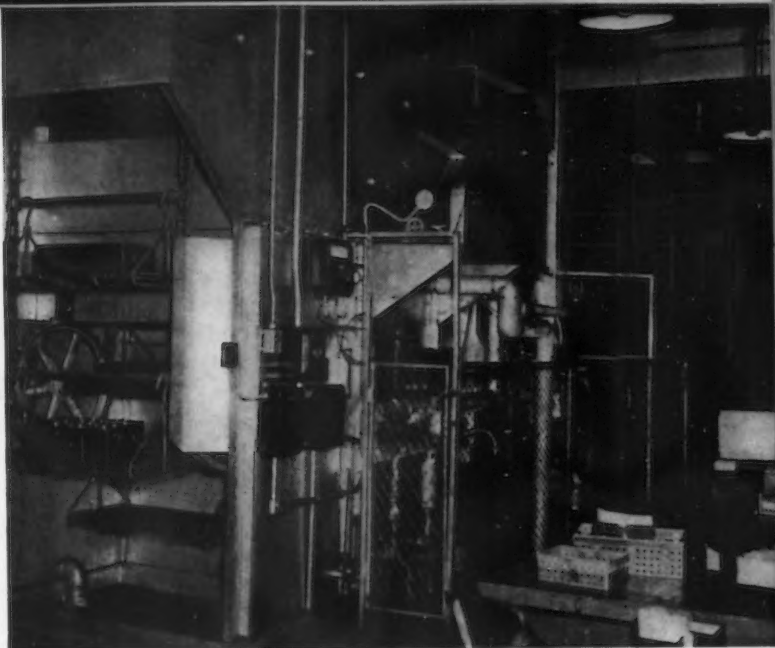


FIG. 7 — Parts leaving this washing machine are sprayed with oil and go to parts storage.

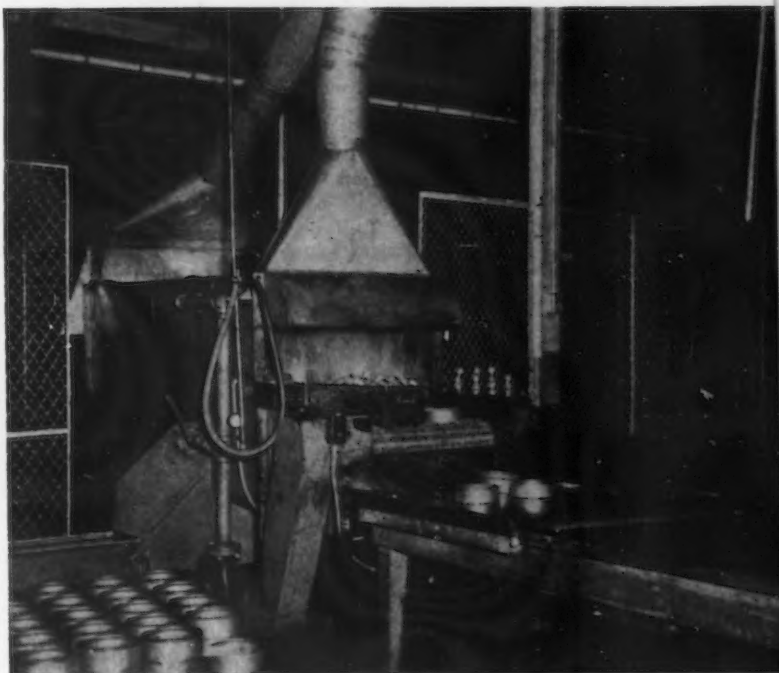
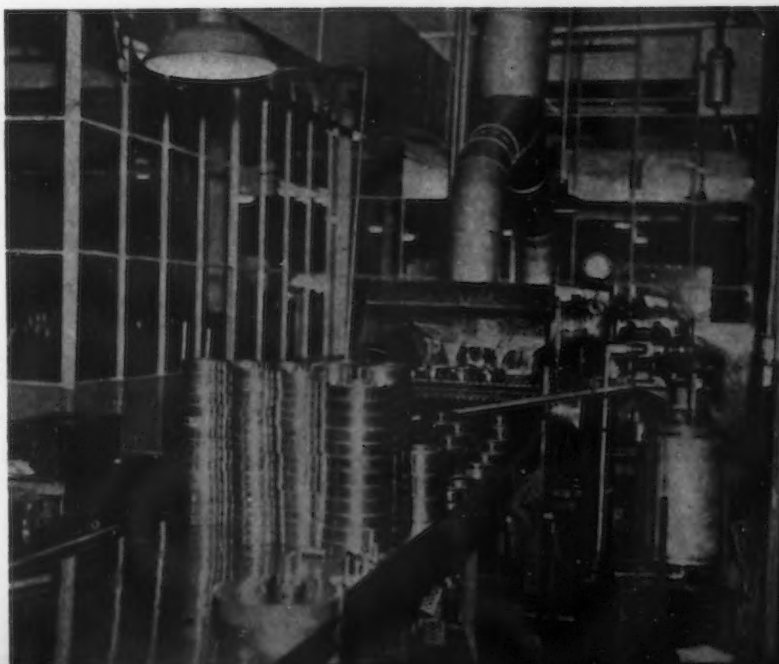


FIG. 8 — As parts come out of storage they are cleaned in this washer.



By C. MORRIS JOHNSON
Chief Chemist Crucible Steel Co.
of America, Park Works

Perchloric

IN the perchloric acid procedure for the determination of metallic iron in iron ores by reduction with sulphurous acid (with or without HClO_4 , the elements Cr, Ti and Mo do not interfere, nor does WO_3 (which is filtered out).

The procedure is as follows: In 600 ml. beakers digest 0.4 and 0.5 gm. of the finely ground ore with 50 ml. of concentrated HCl , and then cool. Add 50 mg. of KClO_4 , and boil off the chlorine smell. When the insoluble residue is white, it is filtered out if the quantity is considerable. Wash thoroughly, first with 1:20 HCl and then with water. Hold the filtrate and washings, and ignite the insoluble residue in a platinum crucible. Add to the ash 5 ml. of 1:1 H_2SO_4 and 2 ml. of HF , and evaporate to fumes of SO_3 . Cool and rinse this solution into the main filtrate and washings. To the latter add 1:1 NH_4OH until iron hydroxide starts to form, i.e., neutralize part of the free HCl .

This solution is transferred to a liter boiling flask and 75 ml. of 1.03 to 1.035 sp. gr. H_2SO_4 are added, after which the solution will turn red. Then, warm until it becomes colorless at 200 ml. volume. Then add an additional 25 ml. of H_2SO_4 , and bring to boil and continue boiling with a rapid stream of CO_2 passing from a pressure cylinder. This requires about 20 min. of fast passage of CO_2 . Keep CO_2 passing until no more SO_2 can be detected, and continue until the reduced solution is cold. Dilute with cold water, saturated with CO_2 , to a volume of 700 ml. Add 100 ml. 1:4 H_2SO_4 and titrate with KMnO_4 standard to first change gotten by two drops of solution. This change is the first pink tint.

No appreciable interference is caused by Cr, Ti or Mo or W (which is filtered out) in solution, other than color. Vanadium does interfere and must be compensated for by adding an equivalent amount to the standardizing mixtures.

The permanganate titrating solu-

IN four preceding sections of this series of articles, the author described the perchloric acid procedure for determining manganese in all types of alloy steel and in iron ore; sulphur in steel, coal and coke; and nitrogen in steel, ferro-chromium, coal and coke. In this, the fifth section of the series, a description is given of the use of perchloric acid in the determination of metallic iron in highly alloyed chromium, molybdenum, tungsten, and vanadium steels, and in 42 per cent nickel steels, ferro-manganese and iron ore.

tion is prepared by dissolving 3.16 gm. KMnO_4 in H_2O and diluting to 1 liter, which is equivalent to about 0.00540 gm. of Fe per ml.

It is economical to prepare the H_2SO_4 water by passing the gas from a cylinder into cold water until the liquid shows a specific gravity of about 1.03 to 1.035. This is kept stoppered in a cool place to prevent stopper blowing out with force.

Metallic iron in iron ore can also be obtained in same manner as in high-chromium-iron alloys, using perchloric acid, as described later.

The determination of metallic iron with H_2SO_4 reduction is illustrated in the accompanying photo. There is shown the reduction flask and the removal of the excess SO_2 by boiling the solution with a rapid stream of CO_2 passing from a pressure cylinder. The beaker (3) contains some Na_2CO_3 to catch the excess of SO_2 . The CO_2 cylinder is equipped with a regulator to control the speed—this is essential. The flask (2) contains the solution of the iron.

High C - High Cr Alloys

The following technique is used for the determination of metallic iron in

high carbon-high chromium iron alloys by solution in HClO_4 acid-reduction with sulphurous acid water in the presence of Cr, Mo, W, V, and Ti.

For an example use high-speed steel containing 8.3 per cent Mo, 4.25 per cent Cr, 1.27 per cent V and about 1.85 per cent W.

Weigh 0.4 and 0.5 gm. of sample in 600 ml. beakers, and digest slowly in 50 ml. 1:1 hydrochloric acid until action ceases. After cooling add 400 mg. i.e., an excess, of KClO_4 and boil off the chlorine smell. Add 30 ml. of HClO_4 and fume heavily until all carbides are dissolved. Then cool. Add 100 ml. of H_2O and boil for 10 min. or until free of the chlorine smell. Then enough permanganate is added to produce a slight cloud of oxide of Mn when boiling. Continue to boil and add KMnO_4 , dropwise, until the cloud no longer disappears. After cooling, add enough H_2SO_4 to just dissolve the Mn precipitate and no more, and again bring to a boil. Cool, again, and add ammonia until the iron just begins to precipitate. Then add HCl until the iron just dissolves.

Transfer this to a liter flask and introduce 75 ml. of H_2SO_4 and warm until the color of ferric iron disappears (volume at this stage is 200 ml.), or if chromium is present until a green solution is obtained and for an additional 10 min. more. (See previous discussion of iron in iron ores by HClO_4 .) Connect the flask with a gas cylinder and boil with a fast stream of CO_2 passing through, until SO_2 smell no longer exists, which should be about 20 min. The SO_2 coming from the reducing flask is passed through a beaker containing a saturated solution of Na_2CO_3 to absorb the SO_2 (see photo). After cooling, dilute with H_2O saturated with CO_2 to a volume of 700 ml. and add 100 ml. of 1:3 H_2SO_4 . Titrate with KMnO_4 solution, 3.16 gm. to 1 liter, until 2 drops give a brown tint; 2

more drops will show a pink shade. Standardize the KMnO_4 in a synthetic mixture containing the same amount of vanadium as is in the sample.

The Cr, Mo, W and Ti take no part in the reactions except a little color interference. This is a distinct advantage in determining total Fe in such ferrous alloys. The color effects can easily be compensated for by the addition of pure salts of Cr. for example.

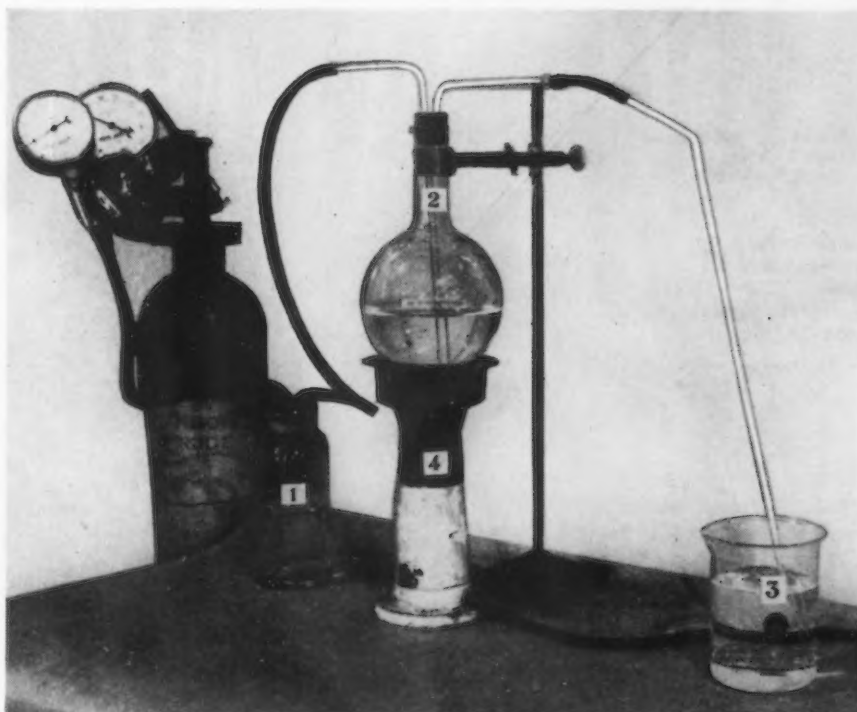
The Fe found in the sample by the foregoing method was 82.35 per cent; this plus 17.38 per cent of determined elements gave a total of 99.73 per cent. The small amounts of P, S, Sn, Ni, Cu, As and N certain to be present are not included in this total. Some months later another analyst obtained 82.56-82.68 per cent Fe from this same sample by titrating with $\text{K}_2\text{Cr}_2\text{O}_7$ and diphenylamine indicator; also by titrating with KMnO_4 to first pink a value of 82.41 per cent Fe was determined.

42 Per Cent Nickel Steel

This method for the determination of metallic iron in 42 per cent nickel steel by $\text{K}_2\text{Cr}_2\text{O}_7$ titration has the advantage that vanadium does not take part in the reactions. Dissolve 0.4 and 0.5 gm. of the drillings in 600 ml. beakers, by heating with 50 ml. 1:1 HCl and 30 ml. of HClO_4 , C.P. 60 per cent strength. Boil down to heavy fumes of HClO_4 to destroy any carbon, and then cool. Dissolve with 150 ml. of H_2O , and then boil off the chlorine smell completely.

After cooling transfer to liter boiling flasks, and then add NH_4OH until some hydroxide precipitate appears. Re-dissolve this precipitate with concentrated HCl from dropping bottle, and then pour in 75 ml. H_2SO_4 of 1.03 sp. gr. Warm until all color of yellow ferric salt disappears.

Boil the solution for 15 min. with a rapid stream of CO_2 from a pressure cylinder, passing it through the flask via a glass tube in a two-hole stopper.



This set-up is used for the determination of metallic iron by H_2SO_3 reduction.

The mixture of CO_2 and SO_2 escaping through the exit glass tube is absorbed in a flask containing 500 ml. of a saturated solution of sodium carbonate. Place the flask in ice water, and maintain this CO_2 stream until the solution in the reducing flask is about the temperature of the ice water. The accompanying photo shows this boiling with the CO_2 passing.

Stop the CO_2 , and dilute to 700 ml. with H_2O saturated with CO_2 . Add 10 ml. of the usual phosphoric acid mixture and 10 drops of diphenylamine indicator and titrate with standard $\text{K}_2\text{Cr}_2\text{O}_7$ to first change of color, i.e., a slight blue. Cr, V, Ti, Mo, and W (the W is best filtered out before reducing the iron), do not interfere except by color, i.e., there is no chemical reaction with the dichromate standard solution under the conditions set forth.

The titrating solutions are as follows:

39.23 gm. of $\text{K}_2\text{Cr}_2\text{O}_7$ dissolved in H_2O and diluted to 8 liters; 1 ml. is equivalent to about 0.0055 gm. of iron.

3.16 gm. of KMnO_4 dissolved in H_2O and diluted to 1 liter; 1 ml. is equivalent to about 0.0053 gm. of metallic iron. ($\text{Fe} \times 1.2865 = \text{FeO}$; $\text{Fe} \times 1.43 = \text{Fe}_2\text{O}_3$; $\text{FeO} \times 0.7773 = \text{Fe}$.) The phosphoric acid mixture is as follows: 1400 ml. H_2O , 300 ml. concentrated H_2SO_4 , and 300 ml. 80 per cent phosphoric acid solution.

The indicator is 1 gm. of diphenylamine dissolved in 100 ml. of concentrated H_2SO_4 .

The following results have been obtained:

56.27 and 56.04 per cent Fe by $\text{K}_2\text{Cr}_2\text{O}_7$ titration; and 56.27 and 56.27 per cent Fe by KMnO_4 titration.

ORNAMENTAL

CASTINGS

• • •

NICKEL - SILVER
bas-relief re-
produced from the
Mark Twain Memo-
rial sculptured by
Walter Russell for
the Hannibal, Mo.,
museum. Cast by
the Superb Bronze
& Iron Co., Brooklyn.

• • •



AESTHETIC principles which have been applied to cemetery design within recent years are responsible for a rapid increase in the demand for cast bronze grave markers. By their uniformity and avoidance of incongruence, these markers and the improvements that usually accompany them contribute dignity, simplicity and beauty.

The essential qualifications for these metal markers correspond closely to requirements for ornamental bronze statuary, historic or decorative plaques, and architectural castings. They must permit faithful reproduction of fine design detail in unusually thin sections for their area, and legibility for many years despite attack by weather and atmospheric corrosion. To avoid surface imperfections, plaques are usually cast with the design side in the drag or lower part of the mold.

A composition which has a pleasing red color and is being used successfully for ornamental castings by many non-ferrous foundries contains 86 per cent copper, 2 per cent tin, 2 per cent lead, 8 per cent zinc and 2 per cent nickel. The relatively high zinc con-

tent facilitates production of sound castings by its deoxidizing action. Zinc and nickel, by improving the fluidity of the molten bronze, help to fill all parts of the mold and so reproduce the design in all its detail. Nickel also improves color and corrosion resistance. The low lead content, although consistent with easy machineability, is

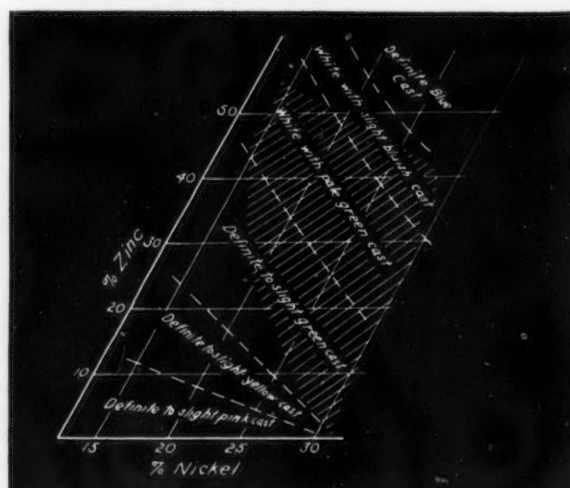
reported to promote the development of an attractive oxidized finish after prolonged exposure outdoors.

When a white plaque is required, the nickel-silver casting compositions offer many further advantages. Their resistance to corrosion is somewhat superior to the usual brasses and increases with the nickel content. After prolonged exposure without cleaning, a patina of a soft brown or green color adheres to the surface and protects it against pitting or further corrosion. A practical composition for the production of metallic white castings contains 60 per cent copper, 20 per cent zinc and 20 per cent nickel. A moderate range of subdued color tints can be produced by adjustment of the copper, zinc and nickel contents as indicated in the accompanying chart.

• • •

COLOR of simple
copper-nickel-zinc
alloys. The shaded area
indicates sensibly
"white" alloys.

• • •



STEEL STEEL STANDARDIZATION

By A. L. HARTLEY

*Metallurgist, R. K. LeBlond Machine
Tool Co., Cincinnati*

• • •

INSPECTION PROGRAM: The specifications previously discussed (in Oct. 5 issue) may be compared with a carefully engineered working drawing, which is merely a method of showing the exact requirements of a given part. The steel specifications are set up for a similar reason, that is, to definitely establish the physical and metallurgical requirements of each grade of steel.

No reliable manufacturer would use mechanical parts of vital importance without first checking their accuracy, because he knows from past experience that some inferior parts are made. For exactly the same reason a material inspection program is essential. Some steel will be received that does not conform to the specifications.

The inspection of incoming steel should be handled in such a manner that maximum results will be obtained with the least possible effort. Most manufacturers of mechanical equipment have a very limited metallurgical staff and it would be impractical for such an organization to check every item as outlined in the previously mentioned specifications. However, it might be well to mention that manufacturers of such items as anti-friction bearings must not only check all items referred to, but others which were not included in this discussion. The aver-

age manufacturer of mechanical equipment is primarily interested in obtaining a commercially sound steel with the expected hardenability, and the best possible machinability for the type of material involved.

I N the Sept. 7, 14, 21 and Oct. 5 issues, the author presented data and discussions dealing with the characteristics of various types of steel required by machine tool builders, summarized a recommended group of steels, and set forth typical purchasing specifications. In this, the final section, a materials inspection program is suggested, and a code system is given for indicating various grades of steel and heat treatments on records and drawings.

Although the following suggested inspection program will not provide a check for every item specified, it will furnish vital information at a minimum inspection cost.

The producer is requested to furnish the following information on all standard grades of steel prior to shipment: (1) Heat analysis; (2) Brinell hardness of the processed steel; and (3) McQuaid-Ehn grain size of the heat from which the bars are made.

If the information conforms to the specifications, shipment is authorized.

After the steel is received, $\frac{3}{4}$ -in. thick disks are cut from a representative number of bars of each size. The disks are carefully inspected for defects, such as seams, pipes and internal cracks. The Brinell hardness is checked at half-radius, as shown in Fig. 4 (in Oct. 5 issue). If the bars are larger than $3\frac{1}{2}$ in. in diameter, they cut down to the dimensions shown in Fig. 5 (in Oct. 5 issue).

If the steel is a grade that will be used for heat treated parts, it is hardened in accordance with the conditions outlined in the specifications covering the particular item. After the part is heat treated the surface "B" (Fig. 5) is polished and hardness readings are made as shown.

If cold-drawn samples are involved, the surface decarburization is checked

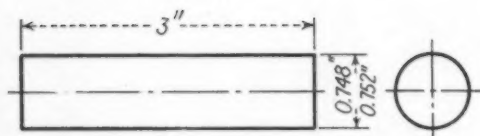


FIG. 6—The inspection of high-carbon tool steel necessitates the use of a hardenability specimen such as shown here.

by making R_c readings on surface "A" (Fig. 5) and comparing them with the readings taken on surface "B." If the readings are the same, the decarburization is considered to be 0.000 in. deep. However, if the surface "A" is softer, 0.005 in. is removed and a second hardness check is made. This procedure is repeated until the hardness of surface "A" corresponds to that of surface "B."

It may be noted from the example

specification No. 3 (in Oct. 5 issue) that a partial decarburization is allowable at a depth of 0.010 in. below the surface. However, the writer has found comparatively few shipments of steel that did not show full hardness at a depth of 0.010 in.

The inspection of high-carbon tool steel necessitates the use of a different type sample from the one used for the other grades. The sample as shown in Fig. 6 is required.

TABLE VII
STANDARD STEEL AND HEAT TREATING SYMBOLS

Steel, SAE No.	Company, Symbol Number	Company, Heat Treatment Symbol	Type of Heat Treatment
X-1314	1	A2, A3, A4, etc.*	Carburizing, single high temperature quench.
X-1314	1	B2, B3, etc.*	Carburizing, double quench.
X-1314	1	C5, C7, C10 etc.*	Salt bath treatment.
X-1340	2	D	Flame harden.
4145	3	E	Harden and temper to 293 to 331 Brinell.
4145	3	F	Harden and temper to 321 to 363 Brinell.
4145	3	G	Harden and temper to 48 to 55 Rockwell C.
4145	3	H	Flame harden.
4145	3	NA	Strain-relieving draw.
4145	3	NB	Normalize.
4615	4	I2, I3, etc.*	Carburizing, single high temperature quench.
4615	4	J2, J3, etc.*	Carburizing, double quench.
High-carbon tool steel	5	K	Harden and temper to 60 to 64 Rockwell C.
	5	L	Harden and temper to 269 to 302 Brinell.
	5	NC	Strain-relieving draw.
	5	ND	Anneal.
4345	10	SE	Harden and temper to 293 to 331 Brinell.
4345	10	SF	Harden and temper to 352 to 388 Brinell.
4345	10	SG	Harden and temper to 55 to 59 Rockwell C.
4345	10	NE	Strain relieving draw.
4345	10	NF	Normalize (controlled cycle).
Non-de-forming	11	SK	Harden and temper to 60 to 63 R_c .
oil-harden-	11	SL	Harden and temper to 269 to 302 Brinell.
ing tool	11	SM	Harden and temper to 55 to 58 R_c .
steel	11	NG	Strain-relieving draw.
	11	NH	Anneal.
Abrasion-	12	SN	Harden and temper to 61 to 63 R_c .
resisting	12	NJ	Strain-relieving draw.
tool steel	12	NK	Anneal.
Shock-	13	SO	Harden and temper to 56 to 59 R_c .
resisting	13	SO	Harden and temper to 56 to 59 R_c .
tool steel	13	SP	Harden and temper to 285 to 321 Brinell.
High-speed	14	SQ	Harden and temper to 63 to 66 R_c .
tool steel	14	NL	Anneal.

* The numerical suffix indicates the depth of carburized case in sixty-fourths of an inch for all carburizing treatments. In the case of salt bath treatments the numerical suffix indicates the case depth in thousandths of an inch.

For bars smaller than $3\frac{1}{2}$ in. in diameter, the samples are obtained by cutting a section 3 in. long from the bar and turning it to the required dimensions. Samples from bars larger than $3\frac{1}{2}$ in. diameter are obtained by cutting a $\frac{7}{8}$ -in. thick disk and machining the specimen from it. This practice is used to avoid any unnecessary waste.

The original bar end or disk is checked for initial hardness as shown in Fig. 4, before the $\frac{3}{4}$ -in. diameter by 3-in. long hardenability sample is made.

To obtain consistent results from the hardenability tests all samples must be processed in an identical manner. The following procedure has been found to give very good results:

(1) Heat a small furnace approximately $7 \times 14 \times 6$ in. to 1550 deg. F. Adjust the burners until a small pine block smokes and gives off intermittent flashes of blue flame. The resulting charcoal should not glow.

(2) Set the samples on end in the central part of the furnace. The same number of samples should be hardened in each test and the same furnace should be used for all tests.

(3) Allow the samples to remain in the furnace for 30 min.

(4) Quench in 10 per cent sodium chloride solution at approximately 70 deg. F. A sufficiently large quenching tank should be used to keep the temperature of the quenching medium from exceeding 100 deg. F.

(5) Rough polish the surface of the specimen and check for hardness.

(6) Notch $1\frac{1}{2}$ in. from the end with an abrasive cut off wheel and fracture. Take care to keep the fractured ends clean.

(7) Rough grind one of the fractured ends to a flat surface.

(8) Check for core hardness.

(9) Etch for two minutes in a 50 per cent HCl solution at approximately 160 deg. F.

The fracture, surface hardness, core hardness, and hardness penetration should be compared with the requirements set up in the specifications.

The specimens shown in Fig. 7 all show a close grain lipped fracture. This fact indicates they all have a fine inherent grain size and will withstand reasonable shock conditions. If a specimen shows a coarse grain fracture that is not lipped, the steel should not be used for any part that must resist impact. It will also be more susceptible to hardening cracks.

It will be noted from Fig. 7 that the

specimens range from shallow to moderately deep hardening. The specifications should definitely state the specific type of steel required and the acceptance of a given lot should depend entirely upon its conforming to the specifications.

If the steel is to be used for highly stressed or very intricate tools or dies, it should also be deep etch inspected. However, this test must be made by a qualified metallurgist and properly interpreted. Whereas, the other tests can be successfully made and interpreted by the average qualified heat treater.

In order to conform with previous work done in studying depth hardening characteristics of high-carbon tool steel, the inspection program as outlined has mentioned the use of a $\frac{3}{4}$ in. diameter specimen. However, the writer feels that a 1 in. diameter specimen should be used as a standard size if deep hardening steel is desired, because the $\frac{3}{4}$ in. size will not give accurate results for the deeper hardening grades unless lower quenching temperatures are employed. This latter procedure is not desirable because the idea of using the higher quenching temperature was to be certain that the steel did not have a coarse grain structure when slightly overheated.

Forging Inspection

Up to this point the inspection of bar stock is the only item that has been considered. A close check on the characteristics of forgings is equally as important. A representative number of all forgings should be checked for initial hardness. If they are to be heat treated, the supplier should be requested to furnish a coupon block from each heat of steel used. The block should have the same dimensions as the specimen shown in Fig. 5, except the thickness should be $\frac{13}{16}$ in. to allow for $\frac{1}{16}$ in. to be machined off of surface "B." This specimen should be hardened in accordance with the conditions outlined in the specifications covering the grade of steel. It may also be desirable to request the forging plant to furnish the chart showing the heat treating cycle employed for each lot.

The above tests have all been of such a nature that the use of special equipment is not essential. However, it should be pointed out that they do not include a check on the grain structure of the annealed steel. Al-

TABLE VIII
STANDARD SPECIFICATION SYMBOLS

Type of Steel	Specification Symbol	FINISH		Heat Treatment, As-Purchased
		Bars	Forgings	
X-1314	1	hot-rolled		none
X-1314	1A	cold-drawn		none
X-1314	1B	turned and polished		none
X-1314	1C	ground		none
X-14	1D	cold-drawn to oversize		none
X-314	1E		smooth hammered forgings	none
X-1314	1F		drop forgings	none
X-1314	1G		rough machined forgings	none
X-1340	2	hot-rolled		annealed (to a definite structure)
X-1340	2A	cold-drawn		annealed (to a definite structure)
X-1340	2B	turned and polished		annealed (to a definite structure)
X-1340	2C	ground		annealed (to a definite structure)
X-1340	2E		smooth hammered forgings	annealed (to a definite structure)
X-1340	2F		drop forging	annealed (to a definite structure)
X-1340	2G		rough machined forgings	annealed (to a definite structure)
4145	3	hot-rolled		annealed (to a definite structure)
4145	3A	cold-drawn		annealed (to a definite structure)
4145	3B	Turned and polished		annealed (to a definite structure)
4145	3E		smooth hammered forgings	annealed (to a definite structure)
4145	3F		drop forging	annealed (to a definite structure)
4145	3G		rough machined forging	annealed (to a definite structure)
4145	3H		smooth hammered forgings	heat treated (hardened)
4145	3J		drop forging	heat treated (hardened)
4145	3K		rough machined forgings	heat treated (hardened)

Note: In a similar manner specification symbols may be set up for each grade of steel involved.

though a microscopic study of the various heats of steel received would be valuable from a metallurgical standpoint, it is not felt that the information obtained would warrant the expense involved, except in organizations which have a metallurgical department. If the initial hardness is within the limits of the specifications, the microstructure will also be very likely to conform to them. This statement should not be interpreted as meaning that there is an absolute connection between hardness and microstructure of annealed steels. It

merely means that if a reliable producer processes a given grade of steel to obtain a given structure and hardness, and obtains the desired hardness the structure will generally be satisfactory.

The form shown in Fig. 8 is a sample materials inspection record. The inspector retains a copy of each report and sends the original copy to the steel storage department. If the items shown on the report are approved, the stock-keeper puts the steel in stock. However, if for any reason a shipment of steel is not approved,

it is not put in stock until the difficulties are adjusted.

A card record (Fig. 8) is kept on all items that do not conform to the specifications. The cards are filed under the vendor's name. The following information pertaining to each inferior item is recorded:

(1) Vendor's name; (2) materials; (3) specified hardness; (4) size of bar or part No., if forgings are involved; (5) amount on order; (6) purchaser's order number; (7) inspection report number; (8) date material was ordered; (9) date material was received; (10) date material was inspected; (11) brief discussion of complaint; and (12) brief discussion of adjustment.

A card system of this type is very simple to keep up. It provides a record that can be readily analyzed to show the source of complaints and type of adjustments that were made in each case. If photomicrographs are taken they can be mounted on the back of the complaint card.

A Code System

The foregoing discussion has considered some of the vital factors involved in building up a suitable steel inventory. It is equally as essential to consider the problems involved in using the material in an economical and practical manner.

The system used for applying such a program must be simple, practical and complete. Although a program may be worked out with the utmost care, the rapid metallurgical and mechanical developments of today will necessitate frequent changes. In view of that fact it would not seem advisable to put trade names, SAE steel numbers or specific heat treatments on records such as drawings, bills of material, etc. If such information were to be

placed on drawings, a change of material would necessitate spending a great deal of time revising drawings and other records each time a given type of steel was changed. The only alternate to revising all old drawings would be to continue the use of the discarded grade for the old parts. This later procedure would eventually defeat the purpose of a standardization program.

The practice of placing the SAE numbers, trade names and specific heat treatments on drawings can be avoided by setting up a system of code numbers and letters which will apply for the given plant involved. Tables VII and VIII, based on the steels selected as a suggested standard series, constitute one method that may be employed.

The information as tabulated in Table VII provides a code system for identifying each grade of steel and the recommended heat treatment.

It is also necessary to show other data pertaining to the characteristics of the material. The following is a list of some of the more important items that must be specified:

[A] Bar Stock.

(1) Finish. Hot-rolled. Cold-drawn to standard size. Cold-drawn to oversize limits. Turned and polished. Ground. Etc.

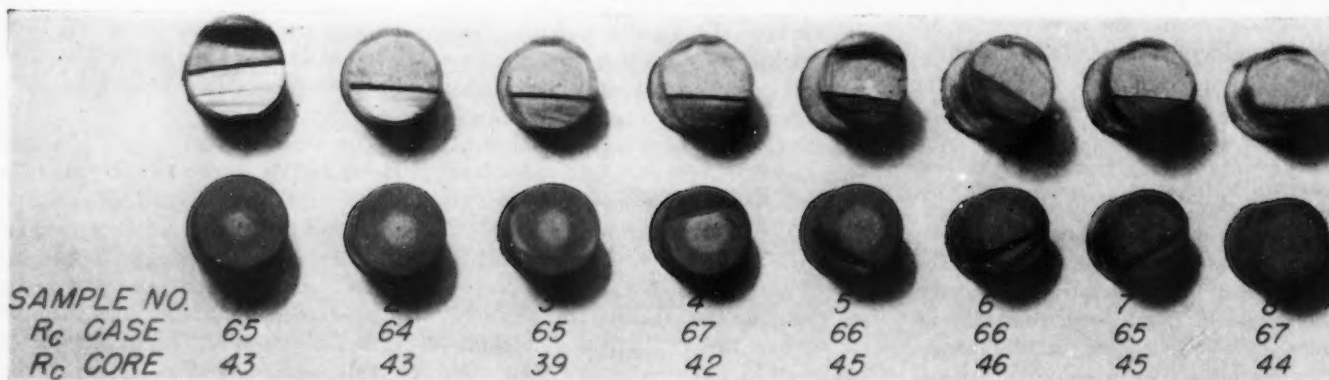
(2) Metallurgical Characteristics as Received. Annealed. Heat treated. Etc.

[B] Forgings.

(1) Finish. Drop forgings. Smooth

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FIG. 7—One per cent carbon tool steel quenched in 10 per cent NaCl solution from 1550 deg. F. These specimens all show a close grain lipped fracture.



hammered forgings. Rough machined, etc.

(2). Metallurgical Characteristics as Received. Annealed. Heat treated; etc.

Part of the information just listed could be written on each drawing. To follow such a procedure would in many cases necessitate rather long notes and at best would generally be incomplete. Such notes would also be subject to revision if any change of program should be deemed advisable.

These disadvantages can be overcome by setting up the specification numbers for each grade of steel in a systematic manner and using that number on all records such as drawings, bills of material, etc. Table VIII shows a partial list of specifications code or symbol numbers set up for the suggested program.

The advantages of a code system of this type may be shown by a typical example. If a smoothed hammered forging of SAE-4145 steel is required, a note of the type which follows would be required if a code system was not employed.

Purchase:

SAE-4145 smooth hammered forging.

6 to 8 grain size.

Normalize 187 to 217 Brinell.

Rough machine.

Heat 1525 to 1575 deg. F.

Quench in oil.

Draw 321 to 363 Brinell.

However, the note just given does not give a complete specification and it would be necessary for the purchasing department to refer the forging company to the proper specification each time forgings were ordered. If at some future time it should be deemed advisable to change the grade steel, it would be necessary to revise,

• • •

NOTE ALL BAR STOCK SAMPLES $\frac{1}{4}$ " THICK DISC CUT AT LEAST $\frac{1}{2}$ " FROM END OF BAR.
H. W. Nichols & Sons Co., Cincinnati, Ohio

Initial hardness 235
Pinell.

Adjustment:
Returned and retreated,
7 days delay.

The writer feels that if a group of companies, engaged in the manufacture of mechanical equipment such as machine tools and related equipment, could coordinate their steel programs in such a manner that only five or six standard grades would be used, and these grades could be purchased to approximately the same set of specifications, better and more uniform steel could be obtained at a lower cost.

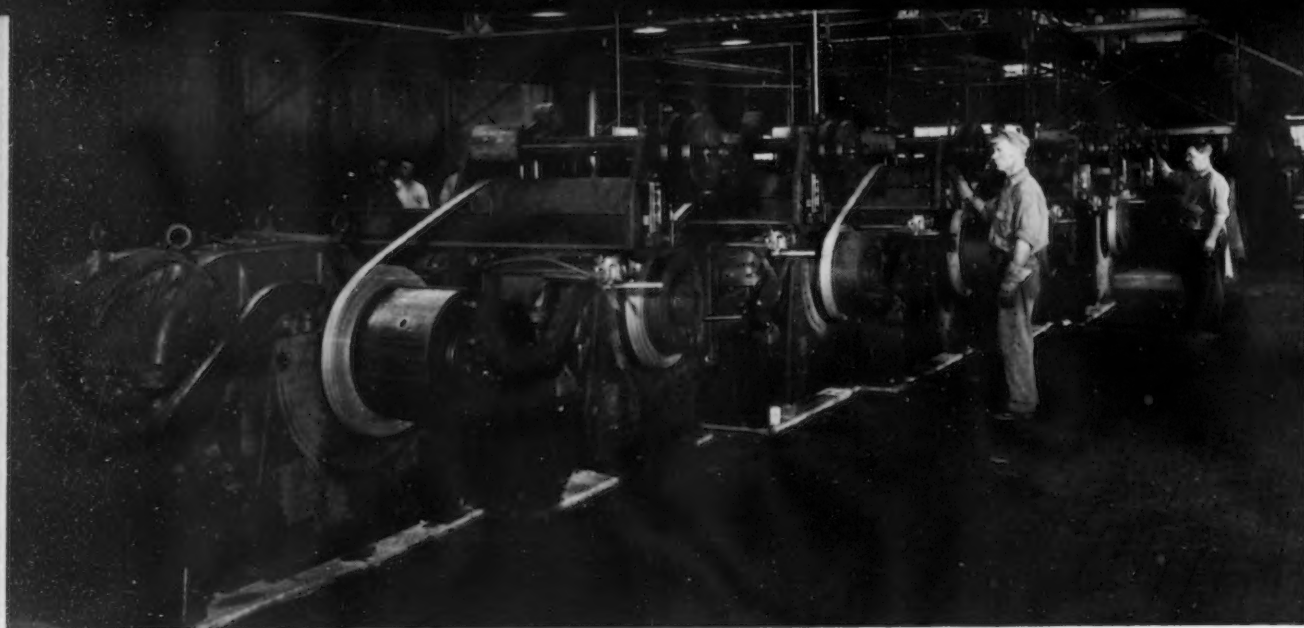
THE IRON AGE, October 12, 1939—37

If a code system is employed the note as listed previously would be reduced as follows:

H refers the purchasing department to the forging company and the inspection department to the exact inspection required. The letter "F" refers the heat treating department to

Conclusion

To make a steel standardization program function properly the engineering, purchasing, production and heat treating departments must be supplied with a sufficient number of copies of a carefully planned and properly arranged standards book showing all of the required information including:



SPECIALLY designed pickling and coiling unit for carbon steels. The six coilers are driven by individual motors, thus allowing independent coiling of the strip. o o o

SUPERIOR STEEL MODERNIZES PR

MORE exacting consumer requirements, as well as intense competition within the steel industry, has multiplied the problems of the small non-integrated steel producer during the past few years. Despite these obstacles, most of these steel companies which purchase their semi-finished steel requirements and turn them into finished products for consumption, have kept up with the times.

Many have expended more and more effort on specialty steel products and have revamped or replaced obsolete or antiquated equipment. In addition to this, many have capitalized on their extreme flexibility to meet changing consumer trends and requirements.

Superior Steel Corp., Pittsburgh, is one such non-integrated producer which has extensively revamped its operating equipment and has added new facilities. Further improvement in the quality of its product, as well as an expansion in the type and number of products produced, has resulted from these changes.

The company has substantially completed a major program of rehabilitation started a few years ago. This project included a specially designed pickling and coiling unit for carbon steels, several modern bell-type annealing furnaces, additional continuous annealing and pickling lines for stainless steel, a 4-high cold mill, a 2-high cold mill, and other accessory equipment in the cold mill department.

Strip Coiled Independently

Before the installation of the new equipment, Superior Steel completely rebuilt a new cold mill building on the site of one of the older mill structures. Feature of the construction was the raising of the crane runways 8 ft. and the building trusses 12 ft. Ample space was provided for future expansion in equipment.

A smaller structure adjacent to the new cold mill building houses the continuous pickling units and also serves as a storage building. A specially designed continuous annealing and pickling unit for stainless steels which is identical to the five which the company

had in operation previously, was constructed and an additional unit of this type is nearing the completion stage. Provision has also been made for additional units as the company's increased production of stainless steel requires them.

Especially designed by Superior Steel engineers to enable extreme flexibility in pickling and coiling various sizes of strip, is a unique continuous pickler and coiling unit for carbon steels. The pickling tank is essentially of the type commonly used. The coiling equipment, however, is unusual in that it utilizes six individual coilers, enabling the coiling of strip at different speeds.

The complete unit will handle strips ranging from 2 to 30 in. wide and at speeds of from 15 to 60 ft. per min. The coiler units are provided with their own rheostat rider arms which decrease the speed of the individual motors automatically as the coil increases in diameter, thus maintaining a constant strip speed through the pickling bath. This arrangement, of course, also allows the taking off of

completed coils at different times without affecting the operation of other coilers.

The motor equipment includes two 7½-hp., two 10-hp., and two 15-hp. motors. Current for the motors driving the individual coilers comes from individual generators located in the power room, all of the generators being driven by one motor.

Material moves from the storage and pickling building to the new cold mill structure where it may be reduced in the new 4-high cold mill. Although this mill's primary use is for roughing operations on stainless steels, it can also be utilized as a finishing mill and, of course, will take care of carbon

which uses the abrasive method for highly polished surfaces.

The layout in the cold mill building is such as to provide ample space for an additional 4-high mill sometime in the future, which will operate either separately or in tandem with the present 4-high mill.

The company, during the past few years, has developed a compact and up-to-date bell-type annealing department which takes care of carbon steels. Furnace equipment consists of three Lee Wilson gas-fired radiant tube bell-type annealing covers, one Westinghouse Electric & Mfg. Co. electric bell-type annealing cover, and one General Electric Co. electric bell-type

annealing cover. Fifteen bases are provided in the department.

Special steel shells completely inclose coils of strip during the cooling period which, in many cases, is expedited by a continuous flow of water over the steel covers. Ample space is provided in this annealing department for additional bell-type annealing units for future expansion. Construction has been such that all pipes, conduits, wirings, etc., are under floor level.

Throughout this modernization program, Superior inaugurated several minor operating changes in the hot rolling department, all aimed towards cost reduction and greater flexibility of production.

PRODUCTION

By T. C. CAMPBELL

Pittsburgh Editor, *The Iron Age*

TWO-HIGH cold mill, recently installed.

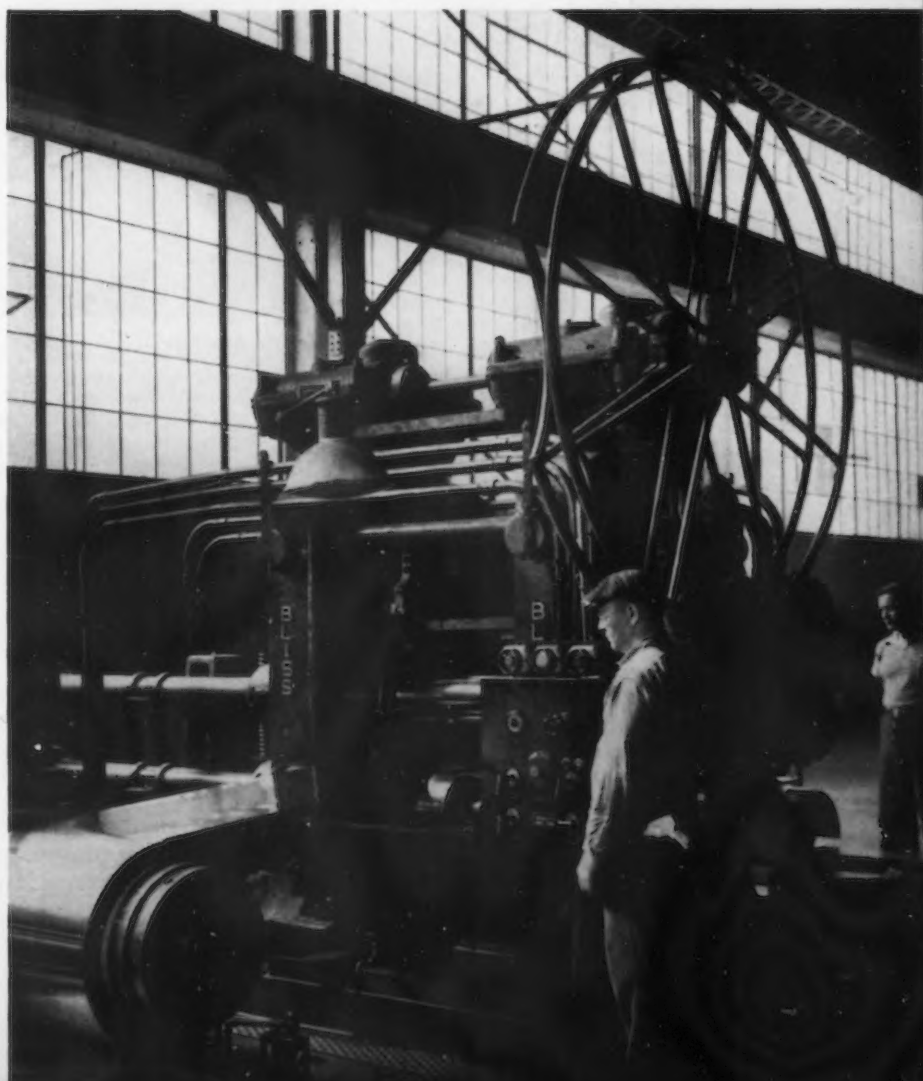
steels as well as stainless. The 4-high mill built by E. W. Bliss Co. has a maximum strip speed of 600 ft. per min. and will handle various widths up to 30 in.

The 4-high mill is driven by a 1000-hp. d.c. motor located in the adjoining power room and is rated at 250 to 750 r.p.m. Current for this motor is furnished by a 1500-hp. synchronous motor generator set at 720 r.p.m.

New Type Polishing Machine

The new 2-high finishing mill constructed by Bliss also handles strip up to 30 in. wide with variable speeds ranging up to 600 ft. a min. Power for this mill is supplied by a 200-hp. d.c. motor, current for this motor being furnished by a 400-hp. synchronous motor generator set.

In addition to the two cold mills, the company has installed other new machinery including a slitting shear unit, trimming shears, leveler and cutting up shears, as well as a recoiler which is also utilized as a polisher. The company has also recently installed a new type polishing machine



GRAY CAST IRON

It is common practice among certain foundries, more particularly those making light-section castings, to add graphite to the iron at the cupola spout during casting. The purpose of this addition is to reduce the tendency of the iron to chill or form hard spots at the edges. In the foundries using this practice, the total carbon in the iron before the addition is generally lower than is normal for the type of work being made. The graphite added at the spout is quite effective, apparently more so than an equivalent amount of residual carbon. In other words an iron of 3.30 total carbon, 10 points of which are added to the spout, would show less chilling tendency than an iron of 3.30 total carbon cast without the graphite addition.

With the prevalence of a practice of this type, the question of the effect of ladle additions of graphite on the mechanical properties of the iron becomes of some interest and importance. Therefore, particularly timely is the recent report by Ohio State University dealing with the effect of the graphite additions on mechanical properties as well as on the chill depth, the tests being conducted by A. H. Dierker, R. P. Schneider and H. H. Dawson.

The melts were made in a small experimental cupola, and the same metallic charge was used for each run. Variations in total carbon between the different runs was secured by variations in cupola operation. The charge consisted of 40 per cent steel scrap, 22 per cent pig iron, and 38 per cent cast scrap.

One thousand pounds of metal was tapped into an insulated ladle which had been well preheated. Hand shanks filled from the large ladle were used in pouring the test castings. The graphite additions were made as the hand shanks were being filled. Each shank held approximately 40 lb. of metal, and 20 grams (0.7 oz.) of graphite was added in each case; hence the amount added was approximately 0.11 per cent. The graphite added was of two different types, artificial and natural. The natural graphite was of two kinds, a rather coarse material known as No. 8 Mexican and widely used for this purpose, and a fine powdery material. The artificial graphite was of three grain sizes, through 8 and on 14 mesh, through 14 and on 35 mesh, and through 35 mesh.

EFFECT OF GRAPHITE LADLE ADDITIONS

Thirteen ladles of iron were poured from each run, two with each type of graphite addition and three with no additions. The three standard ASTM transverse bars were poured as test specimens. Tensile specimens were machined from broken halves of the transverse bars. The chill test was a type widely used in automotive foundries.

Tapping and pouring were done as quickly as possible to secure a minimum temperature drop in the metal during the pouring operation, and the drop was judged to be less than 100 deg. F. between the first and last casting period.

The accompanying table gives a summary of the mechanical tests of all the test bars poured, the tests being carried out according to ASTM specifications A-48-36. The chill test used is a type widely used in automotive foundries.

It was hoped in the investigation to determine the best type and size of graphite to use for the additions. Although the detailed results indicated the coarser sizes of artificial graphite to be slightly better, the data are not at all conclusive and much additional work will have to be done before definite information along this line can be obtained.

As has been stated, the primary object of the investigation was to determine the effect of graphite ladle additions on mechanical properties and on the chilling tendency of the iron. The results indicate that:—

(1) Graphite ladle additions do definitely reduce the chilling tendency of cast iron.

(2) Despite the reduction in the tendency to chill, the mechanical properties of iron castings are not affected in any important degree by small additions of graphite at the cupola spout.

	LADLE ADDITIONS					
	Melt No. 8		Melt No. 9		Melt No. 10	
	None	Graphite	None	Graphite	None	Graphite
Chemical Analysis						
Tc.....	3.05	3.14	3.40	3.43	3.10	3.17
Si.....	1.91	.....	2.19	.....	2.37	.....
Mn.....	0.37	.....	0.44	.....	0.45	.....
P.....	0.231	.....	0.234	.....	0.254	.....
S.....	0.116	.....	0.104	.....	0.120	.....
Chill Depth (in.).....	0.219	0.136	0.138	0.086	0.126	0.072
0.875 in. diameter bar						
Transverse strength (lb.).....	.....	1893	1500	1532	1975	1906
Deflection (in.).....	.....	0.189	0.185	0.191	0.218	0.211
Tensile strength (lb. per sq. in.).....	.....	48320	34500	33610	43450	44450
Brinell.....	.....	227	201	194	217	222
1.2 in. diameter bar						
Transverse strength (lb.).....	2965	3132	2246	2191	3002	2874
Deflection (in.).....	0.235	0.366	0.295	0.322	0.370	0.355
Tensile strength (lb. per sq. in.).....	43460	42980	30320	28420	40550	40200
Brinell.....	221	218	192	182	217	213
2.0 in. diameter bar						
Transverse strength (lb.).....	10700	10440	7160	6780	9405	9360
Deflection (in.).....	0.419	0.422	0.372	0.375	0.413	0.438
Tensile strength (lb. per sq. in.).....	37500	39360	22390	22200	32420	32270
Brinell.....	197	197	134	135	174	170

WHAT'S NEW IN MATERIAL HANDLING APPARATUS

By FRANK J. OLIVER

Associate Editor, *The Iron Age*



NEWEST addition to the line of the Towmotor Co., Cleveland, is the Carloader fork truck. Its short wheelbase of 47 in. enables it to be readily maneuvered in a standard box car. It has the same high speed in reverse as forward. Standard features are retained, such as hydraulic lift and tilt, front wheel drive and rear wheel steer, but the capacity is limited to 4000 lb.

TWO huge electric ram trucks capable of handling triple-welded strip coil stock weighing up to 25,000 lb. have recently been built for steel mill use by the *Yale & Towne Mfg. Co.*, Philadelphia. While not the largest built, they do represent the trend toward larger and heavier handling equipment for the steel industry. Because of the fact that these strips, welded end to end, sometimes total $\frac{1}{4}$ mile in length, the machine is designated as the Yale Quarter Mile Champion.

The electrically welded steel frame has longitudinal steel girders $1\frac{1}{2}$ in. thick and the upright members are heavy H-beams. Alloy steel parts are used throughout, including the ram, which is elevated by two dual alloy steel roller chains of 2-in. pitch. At the load end there is 71 in. overall tread of rubber, and there is independent articulation of dual load wheels for operation over rough ground. For complete articulation in steering the rear wheels, the giant drive unit is mounted in a massive fifth

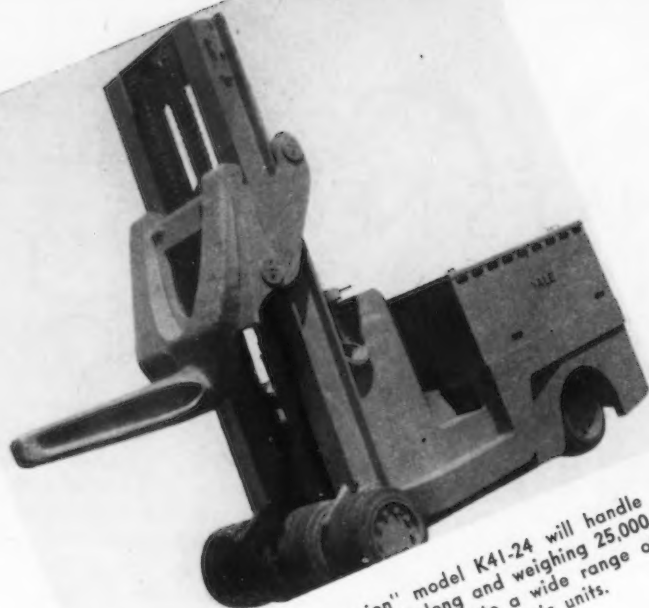
wheel, supported on roller bearings for easy steering. A follow through type of electric steer is employed, also the Yale time-delay, Cam-O-Tactor control of non-plugging type, with complete overload protection. The ram is 51 in. long and has a low height of 15 in. and a maximum raised height of 100 in. Overall length of chassis, exclusive of load is 141 in.

Huge Pack Tilter

SOMEWHAT similar in design to sheet pack tilters installed in steel mills, but capable of handling much larger sheets and tilting them to an almost vertical position is the machine pictured for handling sheets of aluminum. This unit was recently built and shipped abroad by the *Logan Co.*, Louisville, Ky. It receives aluminum sheets up to 100 in. wide and 23 ft. long in a horizontal pack and tilts them to 85 deg. so that the top edge can be attached to an overhead trolley on which the sheets are hung. There is an adjustable bottom guide to locate the pack so that the top edges of the sheets are always at the top of the tilting frame. The operators stand on a wood platform which is rotated by handwheel to keep it horizontal when the tilter is in its upper position.

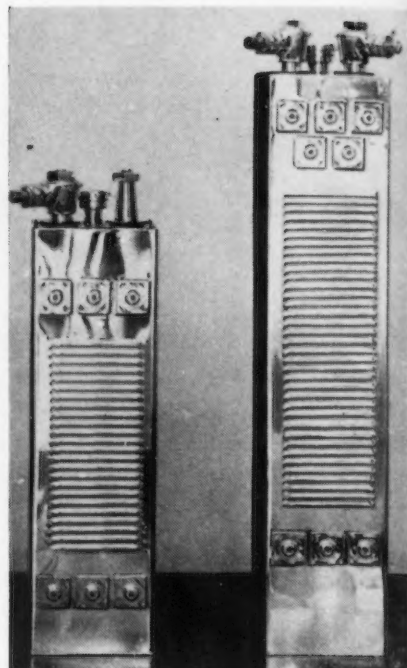
Hand Trucks

A NUMBER of new designs of hand operated trucks have appeared in recent months, either for



THE Yale "Quarter Mile Champion" model K41-24 will handle triple welded strip coils up to 1/4 mile long and weighing 25,000 lb. The battery compartment will accommodate a wide range of types and capacities of batteries or gas-electric units.

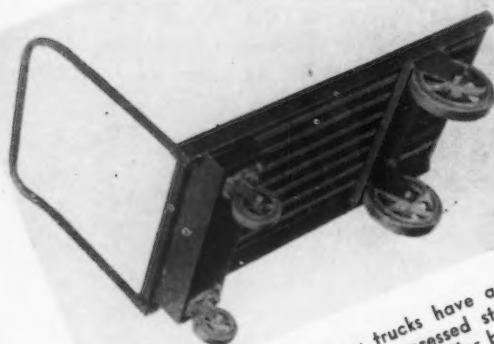
PARTICULARLY useful for large heavy duty industrial trucks operating 24 hr. a day on one battery charge is the new D-type steel-alkaline storage battery cell recently announced by the Storage Battery Division of Thomas A. Edison, Inc., West Orange, N. J. They are said to provide one-third more electrical energy without increase in floor space and hence are useful for narrow trucks. The D-type cell is shown at right, compared with a C-type cell at the left which it exceeds in capacity by 33 1/3 per cent.



FIRST of its kind is this power scoop truck, developed by the Elwell-Parker Electric Co., 3240 St. Clair Avenue, Cleveland. With it, loose material like coal can be loaded, transported, elevated and dumped by power and a one-man crew. The scoop, of 1/2 to 1 cu. yd. capacity, is capable of being rotated over 100 deg. as well as being elevated and lowered by power. Power plant is optionally electric or gas-electric and drive to the various components is through three standardized motors, protected by slip clutches and limit switches. Dynamic electric brakes supplement the mechanical brakes when going down a ramp, and regenerative load lowering is used for returning power to the battery. The scoop loads itself by impact and crowding and rotary motion, undercutting the pile as it loads.



BELOW
THIS Lyon utility truck, with steel top and embedded rollers, has a sharp nose that can easily be pushed under a load. It has two stationary 4-in. wheels and one 3-in. caster wheel.



CLARK steel weld factory trucks have a sheet steel deck supported by special pressed steel channels; also ball bearing swivel casters and roller bearing wheels; rubber tired or semi-steel.



THE hardwood deck of this new Barret floor truck is bound by high carbon steel angles. The brackets supporting the push bar can be readily removed to permit installation of a box, rack or shelf type superstructure.



ALUMINUM packs from 36 to 100 in. wide and up to 23 ft. in length, weighing a maximum of 8000 lb., in this huge Logan pack tilter are raised to an angle of 85 deg. so that the top edge of the sheets can be attached to an overhead trolley on which the sheets are hung by special clamps. The operators stand on a hinged platform which is elevated with the tilter.



THE fully automatic Mansaver coil grab shown has been built by the J-B Engineering Sales Co., New Haven, Conn., for handling coils horizontally in steel mills ranging in weight from 250 to 3500 lb. Being adjustable, the grab will handle coils varying in internal and external diameters and widths. The coil may be placed on a pile and removed therefrom by a skilled crane operator without outside assistance. The grab does not injure the steel or brass.

HEAVY, small parts being unloaded from one of the new heavy duty Collapsi-Bins developed by Mechanical Handling Systems, Inc. By lifting end panels out, the unit becomes a rack. Removing the side panels and corner posts then transforms the Collapsi-Bin into a pallet or lift skid.



ONE of the new and larger size nets high intensity lifting magnets now being offered by Dings Magnetic Separator Co. for handling scrap, billets, pig iron, coils and slabs of steel.

THE BELOW guard wedge shaped Y. this improved loop eye sling streamlines the sling so it is easily pulled out from under loads and is safer to handle than the protruding ends of a conventional eye splice. This improved sling is made of preformed Whyte strand wire rope by the Macwhyte Co., 2906 14th Avenue, Kenosha, Wis.



RUDDOMATIC magnet reel, made by M. P. McCaffrey, Inc., 2121 East 25th Street, Los Angeles, keeps the slack out of the electric cable by maintaining proper tension at all times by means of a spring. Current is transmitted through two brushes and bronze collector rings through a spring. Reel capable of handling up to 100 amp. Reel capacity is 75 ft. of cable. Eastern representative of the company is Forsythe Equipment Co., 37-01 Vernon Avenue, Long Island City, N. Y.



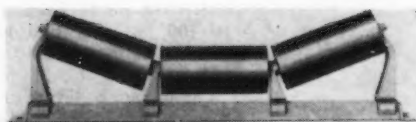
FOR lifting or pulling in any direction, the LiftTug is being marketed by the Paramount Equipment Co., 911 East First Street, Tulsa, Okla. It is made in a variety of sizes and capacities, and in alloy steel, plain steel and certified malleable iron. Two pawls function directly upon the chain, catching each link in lifting and lowering the load by a long hand lever. The chain will move freely forward when taking up surplus and can readily be restrung for taking another hitch. Body is fitted with a universal connection and hook, and all chains are fitted with swivels and hooks.

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hand pushing or jack lift pulling. Chief distinction lays in the construction of the top. The Lyon utility truck, developed by the *Lyon Iron Works*, Greene, N. Y., for example, has an electrically welded steel top, with two rollers inset in it to facilitate loading and unloading tote boxes, crates and boxed parts. The two 4-in. wheels, which may be either semi-steel or rubber tired and which rotate on roller bearings, are so placed that the truck may be easily tilted to nose under a load or to allow the load to roll off the truck. The standard size unit has a platform 22 x 32½ in.



44—THE IRON AGE, October 12, 1939



CHAIN BELT ball bearing idlers, designated as type B-304, are mounted on an inverted angle base which is essentially self-cleaning. They are designed for handling materials of medium weight and are suitable for belt widths of 14 to 30 in. Rolls are made from 4-in. steel tubing, with formed heads pressed and welded into the ends. High pressure lubrication is provided. Bearings are protected by a combination labyrinth and composition seal. Made by The Chain Belt Co., Milwaukee.

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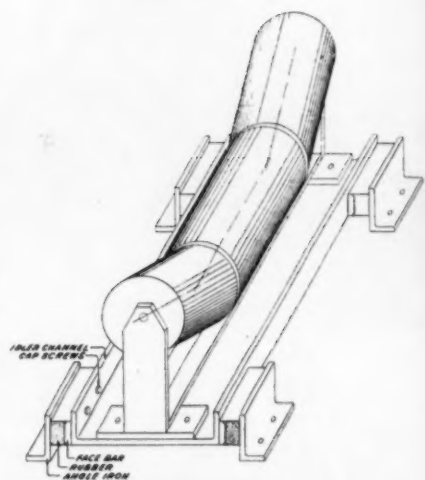
A NEW floor truck has been introduced by the *Barrett-Cravens Co.*, 3255 West 30th Street, Chicago, with a hardwood deck bound with high carbon steel angles to prevent splintering at the edges. The semi-steel wheels are wider than usual to provide greater bearing area for protection to floors. The front wheels are particularly well mounted to assure easy turning and to withstand overload stress.

STILL another new hand truck is the Clark welded steel truck made by the *All Steel Welded Truck Corp.*, Rockford, Ill. The deck is 10 to 12-gage steel turned down over the sides 3 in. and reinforced underneath by 7 to 10 pressed steel channels. Standard sizes range from 24 x 48 in. to 40 x 72 in., with large wheels varying from 9 to 18 in. in diameter and the casters from 6 to 10 in. The trucks are made in tilt or non-tilt types or

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FOR trough conveyors operating at any angle up to 55 deg., Moline Malleable Iron Co., St. Charles, Ill., is offering a Pangborn type flight in which the long link chain is connected into and supported from the flights, rather than fastening the flight on the chain in the conventional manner. This design permits the conveyor to scrape cleaner, provides greater capacity and prevents the tendency to ride over material. Due to the use of long link chain, which is in tension rather than shear, these conveyors can be used over quite long centers. Discharge is made over the head pulley or through gates in the bottom of the trough.

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GOODRICH shock impact mounting carries the conveyor belt idler assembly on four rubber shear blocks. This construction is intended to eliminate a major cause of conveyor belt failure at loading points where impact is severe.

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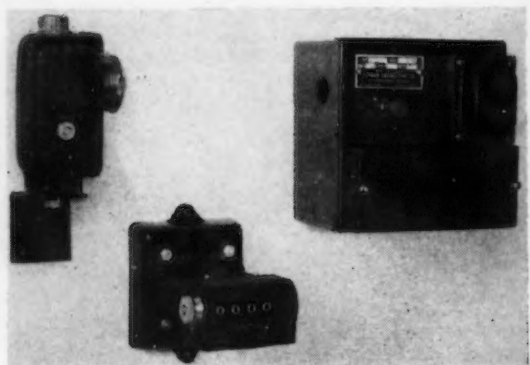
for use with a lift jack. Electrically welded throughout, these trucks compare in weight and cost with wood deck units.

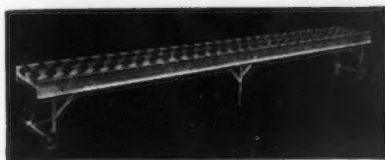
Work Container

COMBINING in one unit a bin, a rack and a pallet, the Collapsi-Bin, announced by *Mechanical Handling Systems, Inc.*, 4604 Nancy Avenue, Detroit, can be used as a shipping container for intra or inter-plant use or for storage purposes. Of 8000-lb. capacity, each unit has a base frame of square steel tubing integral with which is a steel plate to form a smooth surfaced pallet. Side panels of corrugated

o o o

MODEL 566 photoelectric counting equipment, made by the Lipman Engineering Co., 415 Van Braam Street, Pittsburgh, will record up to 600 counts per min., and is supplied with a four digit counter and light source. The photo tube, mounted 4 in. from the opening to minimize effects of stray light, has within it both rectifier and amplifier elements. Control relay is a plug-in type, the contacts of which will carry 3 amp. at 110 volts a.c. The tube itself operates on d.c. for maximum sensitivity.

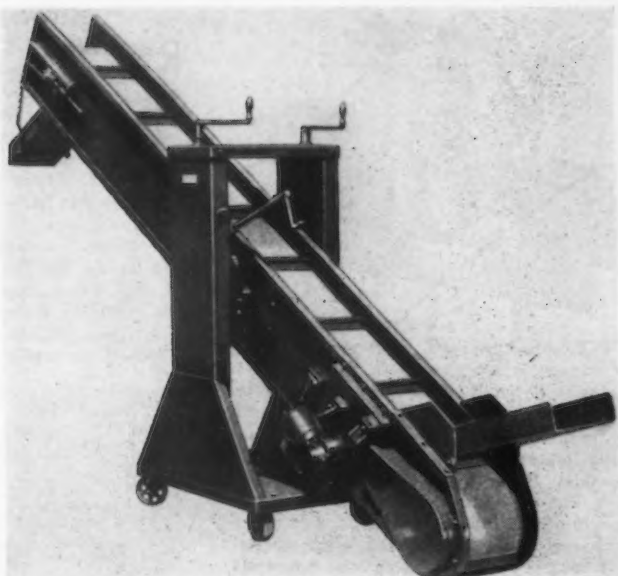




NEW roller type portable conveyor, made by Aluminum Ladder Co., 130 Adams Street, Tarentum, Pa. The size shown is 10 ft. long, 14 in. wide and weighs only 60 lb. It has wheels that can be dropped for rolling the unit from place to place.

AT RIGHT

ELEVATORS, another product of Mechanical Handling Systems, Inc., consist essentially of a cleated endless belt conveyor approximately 9 ft. long mounted on a caster-equipped stand for mobility.



steel have corner posts of steel tubing which extend downward to nest inside the legs of the skid to form a rack. Corrugated end panels, reinforced with an angle steel frame, form a secure joint with the side panel corner posts through a self-locking device and complete the set-up as a bin for small parts.

Each panel is firmly anchored at two points between corner pillars, and lugs on the corner posts provide an additional brace for the end panels. Steel shoes are attached to the legs of the Collapsi-Bin preventing damage to floors when heavy loads are being handled.

When used as shipping containers, these units can be stacked on top of each other by use of nesting plugs which slip into the top of each corner post, and into the legs of the unit immediately above. Side and end panels of Collapsi-Bin may be slipped out and nested flat on top of the skid when being returned empty. Standard size Collapsi-Bins measure approximately 3 ft. wide by 5 ft. long. Total height is 40 in. and height to the top of the base plate is 14 in.

Lifting Magnets

MANY improvements have been made recently in its line of high intensity lifting magnets by the *Dings*

Magnetic Separator Co., Milwaukee. By installing a center support for the coil, the weight is divided so that when the magnet is dropped, the impact of the entire coil is not transmitted to the lower layer of wire. All coil tighteners, clamps and other such devices are installed in cored-out sections of the magnet body, leaving all the coil cavity available for wire. Greater all-day lifts are obtained by using more wire and less current, so that the magnets operate cooler. The coil is contained in a welded steel enclosure, with a special expansion chamber built into it. The top plate and hub of the coil spool is of special dynamo steel, form-

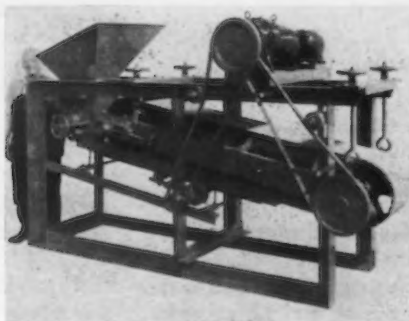


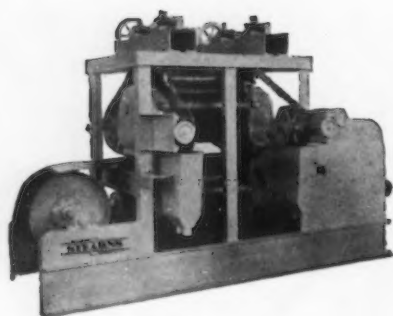
ABOVE

IN the Syntron vibratory feeder for bulk solids, control of the rate of flow is accomplished by regulating the vibratory action through a rheostat in the controller shown at right, which also contains the operating switch and a thermionic valve. The model F-O illustrated has a trough 18 in. long and 3 in. wide and will handle as much as 2000 lb. per hr. It can be controlled to feed only a few pounds per hour, however, as when feeding material to automatic weighing machines. A smaller hopper type unit is made for laboratory use, also larger sizes of the model illustrated, by the Syntron Co., 694 Lexington Avenue, Homer City, Pa.

BELOW

DINGS special magnetic separator designed primarily for reclaiming babbit from steel turnings and for the separation of powdered iron from gangue. The raw material is fed through the hopper onto a mechanically actuated shaking feeder, mounted just below a conveyor belt passing under a series of high intensity magnets. The shaker spreads and opens up the material, allowing the magnetic particles to be lifted out by the magnets and deposited on the underside of the belt which carries them to a separate discharge point. Non-magnetic particles drop off the end of the vibrating tray. Made by Dings Magnetic Separator Co., Milwaukee.

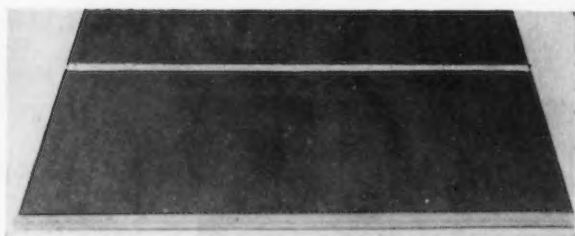




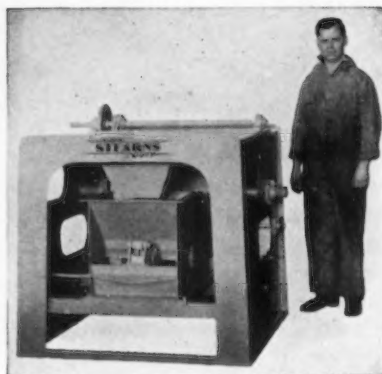
CCROSS-BELT method of magnetic separation is employed in the Stearns-Wetherill type R separator, the material being fed by a special feeding device onto the main belt and the magnetic portions being intercepted and carried to chutes on the side. Either single or multiple magnet units can be furnished. The number of separations produced depends upon the number of magnets employed, each magnet producing two magnetic products. Ammeters in circuit with separately controlled windings make possible the regulation of each magnet by the resistance method to a definite magnetic force, thereby effecting a clean separation and also a duplication when changing from one material to another.

BELOW

REDESIGNED Stearns type DH drum type magnetic separator especially useful for removing impurities from finely ground materials. Separators of this type can now be applied to both wet and dry operations. In the wet operations, arrangements are made for underfeed of the slurry, contact of the material being made in a dense, highly concentrated magnetic field.



NEW type of screen recently introduced by the Jeffrey Mfg. Co., Columbus, Ohio. It is made of piano wire running in one direction only and stretched to such a high tension that the wires develop a resonance vibration having the peculiar property of passing undersize particles much more rapidly than conventional types of screening cloth. Longer life and complete freedom from blinding are also claimed by the maker. At present this cloth is made in spacings from $\frac{3}{8}$ in. to 120 mesh and can be furnished in stainless steel.



ing part of the magnetic circuit and increasing the pull.

Conveyor Idlers

IN order to reduce conveyor belt failure due to severe impact at loading points, the B. F. Goodrich Co., Akron, Ohio, has introduced a new type of shock impact mounting for installation on idlers at these points. The entire belt, idler and frame is permitted to recoil from the impact by mounting the frame at four points in rubber, stressed in shear to give greater movement under load. For belts 48 to 60 in. wide, 4-in. long rubber mountings are usually sufficient for light impact and 6-in. mountings for fairly severe impact, or 8-in. rubber shear strips for the worst conditions. On narrower belts, shorter mountings are used. A single long mounting can also be used, placed parallel to the edge of the belt.

Portable Belt Conveyor

APORTABLE belt type work loader adjustable for both height and angle of incline has been developed by Mechanical Handling Systems, Inc., Detroit, for handling a multiplicity of small parts through successive operations. The Eleveyor, as it is called, has a cleated endless belt conveyor about 9 ft. long and 12 in. wide,

traveling at 60 ft. per min. Maximum angle of adjustment, up to 82 deg., is accomplished by a worm and gear quadrant. Height of the conveyor in a horizontal position may also be adjusted up to 3 ft. Drive is by a $\frac{1}{4}$ -hp. motor.

An adjustable loading chute feeds parts onto the belt where they are picked up by cleats on 18-in. centers. An adjustable delivery chute, suspended from the discharge end of the conveyor frame, delivers the parts to the selected working height or into a portable bin as illustrated for inter-operation storage.

Magnetic Separators

SEVERAL new designs of magnetic separators have been brought out in recent months. Dings Magnetic Separator Co., of Milwaukee, has constructed a new type of separator for reclaiming babbitt from steel turnings or for separating powdered iron from its gangue. Primarily it consists of an agitating feeder above which is a conveyor belt and a series of high intensity magnets which pull the magnetic material out onto the belt.

Two types of separators have been introduced by the Stearns Magnetic Mfg. Co., also of Milwaukee. The Stearns-Wetherill type R separator employs the cross belt principle of

magnetic separation, the material being fed by a special device onto the main belt and the magnetic portions being intercepted and carried to chutes on the side by cross belts. The number of separations produced depends upon the number of magnets employed, each magnet producing two magnetic products. Each individual gap of the magnet is separately adjustable while the machine is in operation. The speed of the main conveyor belt and also the cross belts can be instantly increased or decreased through the medium of variable speed motors. Means are also provided for slack take-up of the cross belts as well as for the main belt.

The second Stearns' unit is the new type DH drum-type magnetic separator, particularly designed for removing impurities from finely ground materials, either wet or dry. The vibrating feeder delivers free flowing dry material in a uniform layer into the magnetic field. In wet feeding there is underfeed of the slurry, contact of the flowing material being made in a dense, highly concentrated magnetic field. Impurities extracted are disposed of as the cylinder rotates. The type DH separator is so designed that it can be built with a multiple drum arrangement, so that the most feebly magnetic particles may be extracted by progressive passing through various magnetic zones.

ANTIMONY IN MILD STEEL

WHILE the influence of the usual alloying elements in steel has been the subject of considerable investigation, owing to the industrial importance of the steels, it is considered that insufficient data are available about the effects of certain other elements, even on the useful properties of steel. The elements which have not been the subject of intensive study as constituents of steel are generally supposed to impart no practical benefit, the properties of such steels being generally anticipated from considerations of the atomic weight, the crystal structure and physical properties of the element, together with a comparison of the influence on steel of an element of analogous characteristics. It has long been considered, however, that the effects of certain elements on steel should be known with a greater degree of exactitude, even when the imparted properties would be detrimental to the industrial value of the steel. The answer to such questions as "what percentage of the element may be present in a carbon steel before the mechanical properties are impaired?" or "what are the effects of small and large amounts of the element on the corrosion resistance of the steel?", etc., must remain a matter for speculation until research provides more precise information.

Antimony is just such an element, therefore of particular importance is the paper dealing with the influence of varying amounts of antimony on some of the properties of a 0.17 per cent carbon steel, recently presented to the Iron and Steel Institute (British) by B. Jones and J. D. D. Morgan.

Most of the steels examined were made from liquid steel taken from a 1½-ton 3-phase Héroult basic electric furnace working a charge of steel

turnings and foundry scrap. After teeming, the steel was dead killed in the ladle by the addition of ¾ lb. of aluminum per ton of metal. Antimony was added as pure metal of 99.8 per cent purity with a guaranteed arsenic content of not more than 0.02 per cent.

Chemical analyses of the steels showed that the loss of antimony was not so great as was expected, owing to the deoxidized nature of the molten metal and the rapid absorption of the element. The basic-electric steel was found to have about 0.3 per cent each of silicon and copper, the latter being unexpectedly found on subsequent analysis.

The determination of antimony in steel was found to be rather difficult until experience was obtained. The method used after much experimenting entailed a separation of pure antimony sulphide from other constituents of the steel, and final titration with a standard solution of potassium bromate. The method was tested by the addition of known amounts of antimony, in the form of a standard solution, to the acid solution of the original steel; the following results were obtained:

Antimony, Per Cent	
Added	Found
Nil	0.012
0.050	0.060
0.60	0.61
1.50	1.49
4.0	4.03

It was found that the original steel actually contained a trace of antimony; the latter was not derived from the chemical reagents.

Detailed experiments on the steels disclosed that, like arsenic and phosphorus, other elements in group Vb. of the Periodic Table, antimony embrittles steel when present in sufficient

quantity, being dissolved in α -iron and stabilizing it.

Steels with 0.17 per cent of carbon and up to 0.69 per cent of antimony can be hot-forged and rolled. Higher rolling temperatures are necessary above 0.55 per cent antimony. Red-shortness occurs in steels containing more than 0.69 antimony, and a 1.45 antimony steel cannot be hot-worked without disintegration. Antimony has an inappreciable strengthening effect on the tensile properties of steel, 0.69 per cent raising the maximum stress value by only 2 tons per sq. in., while the ductility and impact values are decreased. Higher antimony steels have little tensile strength and are seriously embrittled.

The A_1 point is practically unaffected by antimony, but the A_3 temperature is progressively raised. With 2.8 antimony the A_3 is raised from 860 to 940 deg. C. High-antimony steels are practically non-hardenable, owing to a stabilized ferrite structure.

Antimony contents up to 0.24 per cent do not adversely affect carburizing or case-hardening properties, but larger amounts cause abnormal structures, and a consequent soft case on quenching. The response of the steels to nitrogen hardening is negligible. Cementation of steel with antimony powder is readily effected, and the cemented steel is highly resistant to atmospheric corrosion and to acid attack. Steels with a low antimony content are more susceptible to atmospheric and acid corrosion than carbon steel. With increasing antimony, however, the steels become more resistant. Above 0.55 antimony the steels are increasingly resistant to attack by 5 and 25 per cent sulphuric acid at 25 deg. C. They resist attack by hydrochloric acid to a less degree.

THIS WEEK

ON THE

ASSEMBLY LINE

By W. F. SHERMAN
Detroit Editor

... Ford adopts finger-tip gearshift and no-draft type of ventilation for 1940 ... Conventional type of springs installed on all Ford trucks, marking break with past ... Last quarter production due to reach record-breaking heights ... Labor tension eases in Michigan; bearing strike settled.

DETROIT—Most, but not all, of the automobile manufacturers showed their goods far in advance of the National Automobile Show, but arrival of the show week finds a few surprises ready for announcement. Chevrolet and Ford, two kingpin producers, kept details of new models secret until recently. Ford announced its 1940 lines last Friday and Chevrolet is keeping its three lines of cars (one is added this year) under cover until Saturday of this week.

Among innovations on the Ford line are a finger-tip gearshift control on steering columns of all Ford cars for 1940, and the use of ventipanes of the no-draft type for ventilation. An entirely new Lincoln-Zephyr line is of-

fered. Convertible coupes are equipped with vacuum power units to raise and lower tops. Front end designs incorporate low radiator grilles and moderately rounded noses. An improved spring suspension, with a longer, more flexible front spring and a torsion bar ride-stabilizer provide an exceptionally comfortable, steady ride. The torsion bar also contributes to firmer steering.

The Mercury Eight enters its second year, after a first year sales record considered unique in the industry. Three months after its introduction it became one of the first 10 cars in sales. More than 60,000 1939 models have been sold.

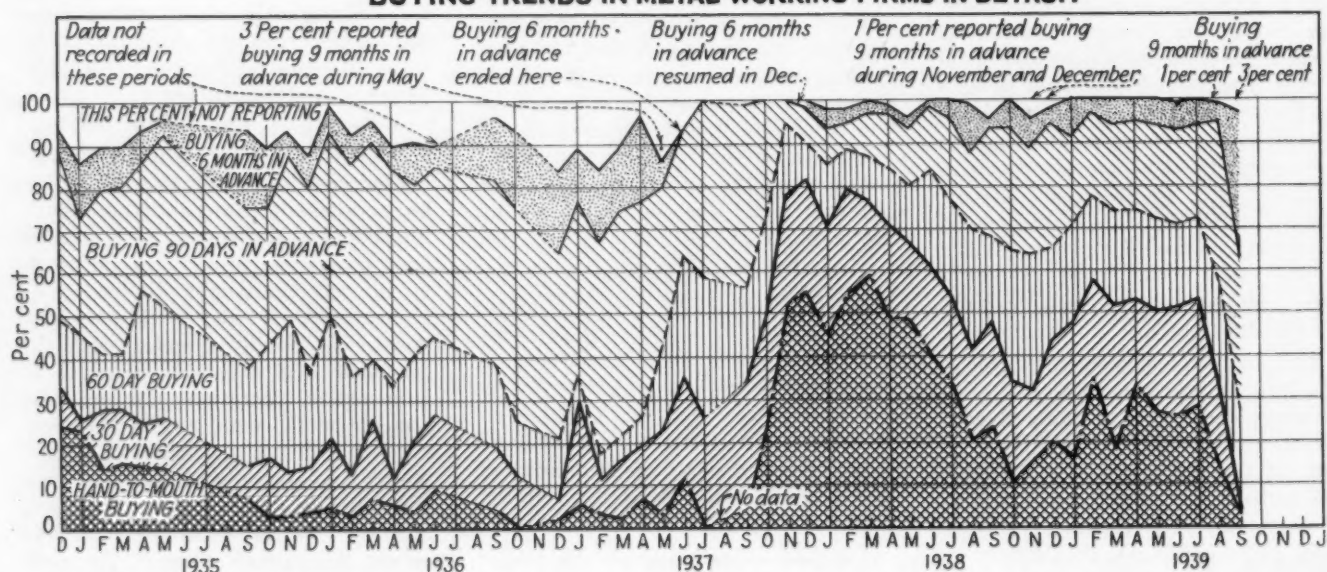
The Lincoln-Zephyr V-12 body and frame structure has been completely

redesigned and is substantially longer and wider. Glass area is increased 22 per cent over last year. Windshield, unbroken by middle support, is deeper and has 105 sq. in. additional glass area. Two new body types, a club coupe and a Continental cabriolet, are added to the line.

Ford trucks, including 43 body and chassis types, six wheelbases and three V-8 engines, will be announced at the same time as passenger cars. Conventional (longitudinal) front springs are used on 1940 trucks in place of the transverse spring, long a Ford standby. It will be remembered that Ford switched to this type of spring for cab-over-engine trucks but has consistently used the transverse springs on all other models in past years. This change means the elimination of front radius rods. Also, Ford has redesigned the entire drive mechanism to eliminate torque and radius rod construction on the rear ends of trucks.

Ford prices have already been nationally advertised and represent slight adjustments which in practically all

BUYING TRENDS IN METAL-WORKING FIRMS IN DETROIT

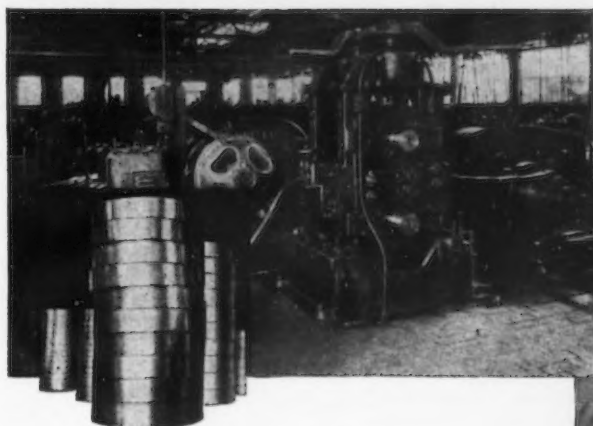


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sections of the country should result in lowered delivered prices.

Chevrolet to Wait for Show

Chevrolet, which will have an overall length of 4¾ in. greater than in past models, has held up detailed announcement about design and prices until the opening day of the show. The line includes a good-looking series of cars and one which is certain to attract attention because of the accessory equipment. Dubbed by the press gallery at the preview "the Chamberlin Special," it includes an umbrella and umbrella-holder alongside the passenger's seat in the front compartment.

Purely as an aside, it seems worthwhile to comment on two "stunt" presentations being made by the automobile industry. Here in Detroit a movie premiere, scheduled for Oct. 19, will be a double-barrelled affair in which the automobile industry will participate with the presentation of its 1940 models. It has long been a question whether the auto industry or the motion picture industry was able to attach more glamour to a new product—now they have been combined. More national in its scope is a "scoop" engineered by Oldsmobile publicists. Bing

Crosby in the "Star Maker" sings "In My Merry Oldsmobile" and the picture hits the nation's screens at a time coinciding with announcement of the new Olds. Crosby's photograph will be used in Oldsmobile advertising and a phonograph record company is sending out 100,000 free records to operators of nickel-in-slot phonographs, all in the name of publicity.

Production Records to Be Smashed

However, ambitious plans for automobile production really hold the spotlight this week. Ford Motor Co. (see THE IRON AGE Oct. 5, Page 85) has announced a schedule of a quarter million cars for the last quarter. These three months will without any doubt be record-making months, with every company in the industry participating to turn out perhaps the largest volume of cars for any last quarter in the history of the industry—certainly, at least, all production records for the last decade will be smashed.

Following Ford's announcement of a 44 per cent increase for the quarter compared with the last four months of 1938, Chevrolet announced assemblies underway in 10 plants with a schedule which calls for the heaviest last quar-

ter production in the history of the company. Manufacturing plants have been in operation since mid-August producing engines, axles, sheet metal and other sub-assemblies. Assembly of trucks began about two weeks ago and passenger cars were turned out for the first time last week. No figures on production for the final quarter were made public. However, unofficially it was estimated that Chevrolet will approach the quarter million mark before the year is ended. In the last six model years the company has averaged one million cars a year.

Such high production is undoubtedly anticipatory of spring sales rather than solely an attempt to meet fall demand. Spokesmen for the industry have predicted a 15 to 20 per cent increase in sales for the model year, so anything in the nature of 40 to 50 per cent increase in production can be construed only in this light. It is generally believed that three reasons constitute the background of the decisions which have lead to such great production:

First, as always, new car sales are greatest during the period when the cars still look like new models, so large fall production is indicated.

Second, as in everything else from sugar to steel, the customers look for price increases which will affect automobiles. In this case the customers are two—the automotive manufacturer expects his prices on materials, and maybe labor, to go up, and the retail automobile buyer has heard enough about the situation so that many of them are going to buy automobiles before new car prices are increased.

In the third place, it is common knowledge that parts manufacturers and auto builders, too, want to "keep the decks clear" in case production must be switched to some emergency item. One parts division of a big auto manufacturing concern has already submitted a bid for manufacture of machine guns under the educational order program—that shows which way the wind blows.

Assemblies at 76,095

Assembly totals continued to grow at a more than seasonal rate last week, with production more than double that of the corresponding week of a year ago. In the seventh consecutive weekly gain registered by the industry, production jumped to 76,095 units from 62,755 in the preceding week, according to Ward's Automotive Reports. A year ago the total was 33,165.

Production on Ford and Mercury (CONTINUED ON PAGE 76)

THE BULL OF THE WOODS

BY J. R. WILLIAMS



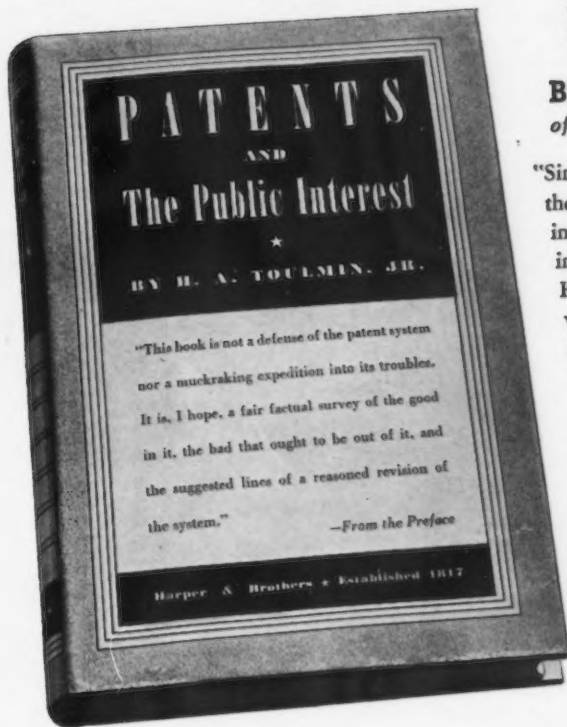
Who Invented Your Job?

FOLLOWING are a few of the jobs created by invention and improvement during the latter part of our machine age. All of them are due to basic time saving inventions—
 saving machine
 to cover the
 by invention

making plants—cash register designers—
 workers producing aluminum paint—engineers—
 and frames in plastic product plants—mak-
 ers of control apparatus for electric furnaces—
 chemists in radium extraction—
 makers of panel instru-
 —assemblers of

workers for rubber tires—diesel motor engi-
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 of Toulmin & Toulmin, Dayton, Ohio

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THIS WEEK IN WASHINGTON

... Sweeping decision in Walsh-Healey steel wage determination case criticized Labor Secretary's order ... Control over prices may be exercised by T. N. E. C. ... Capital still mystified by "blacking out" of War Resources Board.

By L. W. MOFFETT
The Iron Age

WASHINGTON—The decision in the Walsh-Healey steel wage case was so sweeping that the implications go far beyond the immediate issues involved. It was a major victory for the seven independent steel mills in the East which had challenged the Secretary of Labor's steel wage order, and it was a biting defeat for the SWOC, whose members made no secret of their dependence upon the Labor Department's order as an organizing weapon against Bethlehem Steel Co.

But the opinion, coming from three members of the U. S. Circuit Court who were New Deal appointees, was a bitter pill for the Public Contracts Division whose procedure was condemned by the court to such an extent that all wage determinations made so far under the law may have to be thrown overboard. Its ultimate outcome may be the abandonment of the Walsh-Healey Act or a consolidation of administrative functions with the Labor Department's Wage-Hour Division. Some looked to the decision as giving added impetus to the Logan-Walter bill, designed to curb the administrative activities of all quasi-judicial agencies operating in Washington.

The court's decision, upholding the contention of the seven steel companies in every particular, fairly bristled with language condemning the Secretary's determination in the steel wage case. Among other things, the court called the steel wage order "a palpable evasion of the letter and spirit of the statute."

A dissenting opinion by Judge Edgerton turned aside the "locality" argument, holding that the suit is against the Government and is there-

fore not maintainable without its consent, and that statutes covering Government contracts are intended for the benefit of the Government, not for contractors or bidders.

Secretary's Order Criticised

The Secretary's order, grouping 13 states in one "locality," thereby subjecting small mills in the East to pay a minimum wage of 62.5c. or 5c. above the prevailing minimum wage in that area, brought from the court the statement that "the determination in this case goes so far beyond any possible proper application of the word as to defeat its meaning and to constitute an attempt arbitrarily to disregard the statutory mandate."

What was most disturbing to the Labor Department was the court's restrictive language placed on the term "locality," the heart of all wage determinations including that in the steel wage case. Fully substantiating the view of the steel companies, the court said that Congressional intent was to limit the word to its generally accepted sense, as in connoting a community or localized area. The Walsh-Healey board's practice in making recommendations under the law—and this has been upheld for the most part by the Secretary — has been to use wide latitude in interpreting the word "locality." In its original steel wage recommendation, half the country was classified as one "locality." In another case, affecting the aircraft industry, the entire country was determined to be one "locality" for the purpose of fixing minimum wages for Government contractors.

Moreover, the practice has grown up for the department to fix minimum

wages based on those dominating in a particular industry rather than on "the prevailing minimum wage" as required by the Walsh-Healey Act. To put it another way, the policy of the department has been to administer the law on the basis of what it thought the law should say rather than on what the law actually said.

That the department was treading on dangerous ground was called to its attention last December during oral arguments on the steel wage recommendation by Representative Francis E. Walter, Democrat of Easton, Pa., who was one of the sponsors of the Walsh-Healey bill. Mr. Walter, a member of the House Judiciary Committee, told Assistant Secretary of Labor Charles V. MacLaughlin that the intent of Congress in using the word "locality" was to restrict the department's power to fixing minimum wages for local areas.

Says Law Was "Flouted"

The Congressman told THE IRON AGE this week that the court decision came as no surprise to him since in his opinion, based on "first hand information of what Congress intended from the start" the Labor Department in the steel wage had openly "flouted the law."

From the start, the steel companies taking court action against the Government have insisted that the law did not provide for any administrative remedy and this view was upheld in the court's decision. On that assumption, Mr. Walter introduced a measure in Congress last session aimed at revising the Walsh-Healey Act to specifically provide for judicial review under the law but he later abandoned the idea. The outcome was the introduction of another bill aimed at curbing the administrative functions of all quasi-judicial agencies. Combined with the Logan bill, which passed the Senate last session, this became known at the Logan-Walter measure.

The bill is being vigorously opposed by New Deal agencies because it would cramp their style by providing more adequate review before orders become effective. Hearings would be mandatory before rules are promulgated and any decision could be appealed to the courts, thereby speeding up relief without the necessity of resorting to

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Follow the leaders of the machine tool industry who choose, use and recommend SUNOCO Emulsifying Cutting Oil on their machines. One of these is Jones & Lamson Machine Co. They know from experience SUNOCO aids machine tools to produce more accurate, fine-finish work at rated capacity.

In your shop . . . with your material . . . under your own working conditions . . . test SUNOCO. Call in a SUN Cutting Oil Engineer — let him show you how to step ahead to full rated capacity.

SUN OIL COMPANY, Philadelphia, Pa.

PERFORMANCE DATA

Operation: Turning 8½" Collet Chuck Body
Machine: Jones & Lamson 7-B Saddle Type Turret Lathe
Material: X - 1315
Spindle Speed: 40 R.P.M.
Cutting Speed: 88 S.F.P.M.
Feed: .022"
Depth of Cut: 1½"
Cutting Lubricant: 1 part Sunoco to 20 water

Courtesy of Jones & Lamson Machine Co.



PETROLEUM PRODUCTS FOR ALL INDUSTRIES

the more cumbersome remedy of seeking a court injunction. The measure is on the House calendar and Mr. Walter claims he is assured of 280 votes in the House.

Act May Be Abandoned

The effect of the decision in the steel wage case can be expected to stimulate interest in the Logan-Walter bill and to revive interest in the report that the Walsh-Healey Act may be abandoned and the activities of the Public Contracts Division consolidated with the Labor Department's Wage-Hour Division. In following its history, it is recalled that the Walsh-Healey Act was put on the statute books primarily to set up some Government wage standards after the collapse of the NRA. It was recognized by many in Congress as merely stop-gap legislation and the claim that it is no longer necessary since passage of the wage-hour law has great merit.

The Public Contracts Division and other Labor Department officials are confused over just what should be done in view of the far-reaching decision. To follow any other course than to appeal to the Supreme Court would mean throwing all wage determinations thus far made under the law out the window. Of course, that will be necessary anyway if the Supreme Court upholds the opinion handed down by the Circuit Court.

In the meantime, the court injunction which has stayed the steel wage order since last March continues in effect. The Government has until Oct. 21 to ask a stay of the mandate, the forerunner of an appeal to the Supreme Court. After that, counsel for the Government has three months in which to prepare a case for Supreme Court appeal. Four months would elapse before the case came up for argument before the high court. Meanwhile, officials are stunned by the far-reaching decision.

Canada Embargoes Exportation of Scrap

WASHINGTON—Department of Commerce information made public last week is that Canadian collectors of customs have been instructed to refuse permits for the exportation of scrap iron and steel owing to a shortage. The American Commercial Attache in Ottawa reported that the measures taken against exports are only temporary and may be modified when circumstances permit.

Washington Still Mystified by Disbanding of War Resources Board

WASHINGTON—Set up only two months ago, the sudden blacking out of the War Resources Board by the President still leaves mystification. Official and unofficial explanations for its disbandment do not wholly remove the bewilderment. The President has sought to treat the matter casually, as if it was only a routine affair. The report of the board, he said, is only in line with a 150-year old practice of periodically taking up various phases of the national defense. Yet in all the country's history, there has been but one precedent for the agency—the War Industries Board, hastily established during the World War. Its purpose was quite different, because of its elaborate, thorough machinery, from the old practice of hit-or-miss study of industrial mobilization.

In its short existence, the board, even with a vast amount of material already at hand, hardly could have completed the great task of studying the possibilities of industrial expansion, the relation between increased production and transportation and power facilities, various forms of administrative handling of the stepping up of industry, the relation of industry to agriculture and a multiplicity of other subjects. Hence the board's disbandment is not adequately explained by the statement that the President merely wanted its advice and never intended to make it permanent.

There probably never was any thought that it was intended to be permanent. But the fact that it was established as the war clouds in Europe became more menacing certainly gave the impression that preparation for national defense was being made, and that the board would function in the event the United States became involved in the war. Ample authority is provided in the national defense act for establishing such a board. There are, however, many reports which profess to throw light on the reasons for the abrupt scrapping of the board.

Reasons Given for Disbandment

Among the reasons given are the following:

Effort to allay growing public fear that the Administration was war-minded.

Creation of board was announced jointly on Aug. 9 by

Assistant Secretary of War Johnson and Assistant Secretary of Navy Edison in absence from Washington of the President and Secretary of War Woodring and was liquidated as a slap at Johnson who is engaged in hostilities with Woodring.

New Deal left wingers opposed setting up of outside war agency of industrialists and want to set up own body to control industry, not only in case of war, but in peace-time as well.

Thunder of CIO against the board, insisting that its personnel should include "little business," labor, agriculture and consumer.

If the setting up of the board, headed by Chairman Edward R. Stettinius, Jr., of the United States Steel Corp., came as a surprise to the President, as reported, it is difficult to understand why he did not order its immediate disbandment and repudiate the statement that it was established with his approval. The President himself announced one of the appointees and received reports on the progress of the board's studies. In announcing that the board would be disbanded upon completing its report to him, the President said that he does not intend to make the report public, because it is based on the United States being at war. This was pointed out evidently to emphasize the President's anxiety to offset public concern that he is war-minded, a point he dwelled on first in his address to the present special session of Congress. The President said that since the United States is not a party to the European conflict there would be no advantage in publishing plans that have been discussed for coordinating and making use of the nation's resources in case of future emergency. Some surprise was occasioned by his statement that there was no controversy in the board's activities inasmuch as within the New Deal itself the board was the object of frequent criticism by baiters of business. The announcement of the President that there is nothing frightening about the report, on the other hand, was no surprise. On the contrary it is the feeling that, whatever its incompleteness, the report on the whole is reassuring as to the industrial

potentialities of the country from a point of military mobilization.

Ickes Attacks "Extra-Legal" Bodies

Those who think the Administration "inner circle" persuaded the President to liquidate the board claim that supporting evidence of their view is to be found in the attack made on the board by Secretary of the Interior Harold L. Ickes in a radio debate with Gen. Hugh S. Johnson at Town Hall in New York last Thursday night. The subject debated was "How Can We Defend Democracy in America Now?"

Mr. Ickes opposed the setting up by the Government of outside agencies and lashed out at the board as a potential nucleus for an "extra-legal autocracy," which in case of war, he said, would destroy both American democracy and the Roosevelt Administration's social reforms. General Johnson shared Mr. Ickes' concern over dictatorship growing out of the existing situation, but took an entirely opposite position from that of his contemporary as to what might lead to a dictatorship. He insisted that war time emergency powers should be placed in the hands of temporary outside agencies such as the board, and not given to permanent Government bureaus. He predicted that President Roosevelt and the New Dealers would perpetuate themselves in power if they got enough of such authority. While supporting the establishing of outside agencies and the high-grade character of the personnel of the WRB, the General said he thought it was a blunder to place on the board industrialists who compete with other industrialists over whom the board would have authority.

In his tirade, Mr. Ickes pictured the United States as not being threatened in the present crisis from without as much as from within by two "invisible enemies"—profiteering at the expense of wasting natural resources and the "more insidious" suggestion that "in time of emergency we should hand over the effective control of the Government to specially selected extra-legal groups, whether under the name of economic boards or industrial councils, to regulate and regiment the life and work of the nation."

Some saw the possibility of an inside Government industrial mobilization agency in a line, little noticed at the time, in the President's order reorganizing the White House forces.

The sentence read as follows:

"There shall be within the executive office of the President ***** in event of a national emergency, or threat of

Shown above is a picture of the ultimate profits which American industrial leaders believe will be made by employees, employers and stockholders as a result of the present European War

national emergency, such office for emergency management as the President shall determine."

NLRB Issues Various Orders

WASHINGTON—The National Labor Relations Board has certified the CIO's Sloss Red Ore Local 109, International Union of Mine, Mill and Smelter Workers, as the sole collective bargaining agency for a majority of production and maintenance employees of Sloss-Sheffield Steel & Iron Co., Sloss, Ala. The certification results from an election on Sept. 12.

The board also has called a secret ballot election to permit pattern and model makers at the plant of Willys Overland Motors, Inc., Toledo, to vote for the AFL's Pattern Makers League of North America, the CIO's United Automobile Workers of America, the AFL's United Automobile Workers of America, or for none.

Also certified by the board was the CIO's United Electrical, Radio and Machine Workers, as representative of a majority of employees at Minneapolis-Moline Power Implement Co., Hopkins, Minn.

The board has ordered the Phelps Dodge Corp. to disestablish employee representation plans at its mine in Jerome, and at its smelter in Clarkdale, Ariz. The NLRB further ordered the company to bargain upon request with the AFL's International Association of Machinists, International Brotherhood of Boilermakers, Iron Ship Builders and Helpers, Interna-

tional Brotherhood of Electrical Workers, and the United Brotherhood of Carpenters and Joiners.

The board also has called secret ballot elections for employees of Toledo Steel Tube Co., Toledo, where tool and die makers will vote for the Mechanics Educational Society of America, the AFL's automobile workers union, the CIO's automobile workers union, or for none.

TNEC Steel Hearings Postponed Until Oct. 23

WASHINGTON—The Department of Justice has announced that the date to begin steel hearings before the Temporary National Economic Committee has been postponed to Oct. 23. Originally the date had been fixed at Oct. 16 but was changed because the committee has not completed the oil hearings.

While the department estimates that it will take only two weeks to present its steel case, it is expected that, like most of the other hearings, the steel presentation will take more time than at first predicted. Some 25 or 30 executives will be called to the witness stand and it is doubted that the Government can conclude its case in less than three weeks. In addition to submitting evidence of a non-technical character before the full committee, it is the plan of the department to hold hearings on technical problems of the steel industry before a subcommittee of the TNEC.

Monopoly Committee to Keep Watch On Price Developments

WASHINGTON—The craze of Washington to regulate everything and everybody, except Washington itself, which needs regulation the most, has taken another dizzy twist. This time the country is promised the unusual spectacle of a Congressional-executive committee to control prices. It is not simply to be a study of price changes and their effect on the national economy. Rather the undertaking, probably an impossible as well as a strange one, is to watch constantly changes in prices and price policies in the industries of the country.

The conception comes from Senator O'Mahoney of Wyoming and it has been given the ready acquiescence of President Roosevelt. The Senator proposes to make his Temporary National Economic Committee the vehicle for the grandiose scheme. Though Senator O'Mahoney has frequently assured the country that the TNEC's function is to establish between business and Government a relationship "that will stimulate free enterprise and preserve the democratic institutions bequeathed to us by the fathers," he now proposes to employ the committee in the present crisis to suppress profiteers by the "forceful check of impartial public inquiry." The President was quick to write the Senator suggesting that the committee might "become an important part of our first line of defense against ugly and inhuman greed."

Price Control Threat

The move has the earmarks of another threat of price control that has been rampant in Washington ever since the President in his neutrality broadcast warned against profiteering. Implications of legislation were first given out and the Department of Justice said a bill was being drafted. To strengthen the attack, Assistant Attorney General Arnold threatened anti-trust action.

Now it is proposed that the TNEC take up the job ordinarily left to the executive branch of keeping in close touch with the industrial markets, passing upon prices, and determining the difference between legitimate increases, and "profiteering."

It can be doubted that the whole committee, made up of members of Congress and of the executive department, will agree that the task is one for it to perform, or can be performed

by it, or is desirable. It so happens also that Congress, not a committee, has the power to determine action to suppress so-called profiteering and should it do so it will certainly not choose the TNEC or any other committee as the agency to carry out its direction. The authority will be turned over to an executive agency.

To Watch Price Developments

Skating out in still another of many directions, the matter of price control has been taken up by the Business Advisory Council of the Department of Commerce. In its first meeting since last June, the council last Wednesday agreed to act as a medium between the Government and business to seek voluntary action against undue price increases arising from the European war situation. Chairman W. Averill Harriman said the council will keep a watch on price developments, seeking to find out if there was any field in which it could cooperate to prevent unwarranted advances, as requested by Assistant Secretary of Commerce Noble.

Government Orders for Week Ended Sept. 30

WASHINGTON — Government contracts for iron and steel products, as reported by the Labor Department's Public Contracts Division for the week ended Sept. 30, totaled \$306,341. During the same period, the division reported contracts totaling \$505,352 for non-ferrous metals and alloys; and \$6,563,525 for machinery. Details follow:

Iron and Steel Products

William Scrimgeour, Washington, War Q M C, tableware, steel ..	\$16,500.00
Charles F. Guyon, Inc., New York, Panama Canal, steel pipes	11,439.68
Noland Co., Inc., Washington, War Q M C, plumbing supplies	14,205.05
Bethlehem Steel Co., Bethlehem, and Steelton, Pa., Navy Purchasing Office, rails and other track equipment	11,669.85
Penn Galvanizing Co., Philadelphia, Navy S & A, steel I-beams	Indefinite
Lukens Steel Co., Coatesville, Pa., Washington Navy Yard, plates ..	13,408.59
Joseph P. Cattie & Brothers, Philadelphia, Navy S & A, steel plates ..	15,600.00
Carnegie-Illinois Steel Corp., Pittsburgh, Navy S & A, structural angles	16,818.75
The Cold Metal Process Co., Youngstown, War Ordnance, strip steel ..	23,813.40

Jones & Laughlin Steel Corp., Pittsburgh, Navy S & A, steel angles ..	Indefinite
Joseph P. Cattie & Bros., Inc., Philadelphia, Navy S & A, steel shapes	Indefinite
Carnegie-Illinois Steel Corp., Washington, Navy S & A, steel shapes ..	Indefinite
Inland Steel Co., Chicago, Interior, steel sheet piling	24,440.53
Bethlehem Steel Co., Bethlehem, and Rankin, Pa., TVA, structural steel	15,498.00
Somaron Sheet Metal Works, Inc., Bronx, N. Y., WPA, fabricated steel	36,116.00
Macwhyte Co., Kenosha, Wis., Phila. Navy Yard, tie rods	12,915.00
Pollak Mfg. Co., Arlington, N. J., Phila. Navy Yard, exhaust manifolds	12,900.00
The B. F. Goodrich Co., Akron, Ohio, Navy S & A, pickling tank ..	12,824.00
National Tube Co., McKeesport, Pa., Navy S & A, flasks	21,471.07
Graybar Electric Co., Inc., Denver, Interior, watertight connectors, expansion couplings, tees	25,837.58
Lucian Q. Moffitt, Inc., Akron, Ohio, Norfolk Navy Yard, bearings ..	10,800.15
Allegheny Ludlum Steel Corp., Brackenridge, Pa., Portsmouth Navy Yard, corrosion-resisting steel	10,084.07

Non-Ferrous Metals and Alloys

Aluminum Co. of America, Cleveland, Portsmouth Navy Yard, aluminum alloy	\$16,400.00
Scovill Mfg. Co., Waterbury, Conn., War Ordnance, cartridge cases ..	302,937.00
The American Brass Co., Waterbury, and Torrington, Conn., War Ordnance, cartridge brass cups ..	31,782.00
Revere Copper & Brass, Inc., Rome	

The group is said to have expressed the view that there had been no undue price increases at least to any marked degree and that sustained increases in the future appear to be improbable. In certain cases it was the opinion that price increases were unavoidable because the war had shut off imports of raw materials. At the same time there was expressed a belief by some members of the council that a decline may be expected in prices of commodities which took a sudden upward swing on the outbreak of war. This rise was held to be due to over anticipation rather than to profiteering.

Meanwhile, the President is reported to have taken a "very guarded" attitude toward the drive of a House liberal block for an excess profits tax on "munition manufacturers." Headed by Representative Coffee, Democrat of Washington, the group called on the President and asked his support on such a tax. It is said the President would go no farther than to declare that he favored the principle of the tax. Though Mr. Coffee said he intends to fight for the legislation at the present session of Congress, absence of Administration support it is taken to mean that the effort will not be successful.

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Ohio Ferro-Alloys Corporation
Canton, Ohio

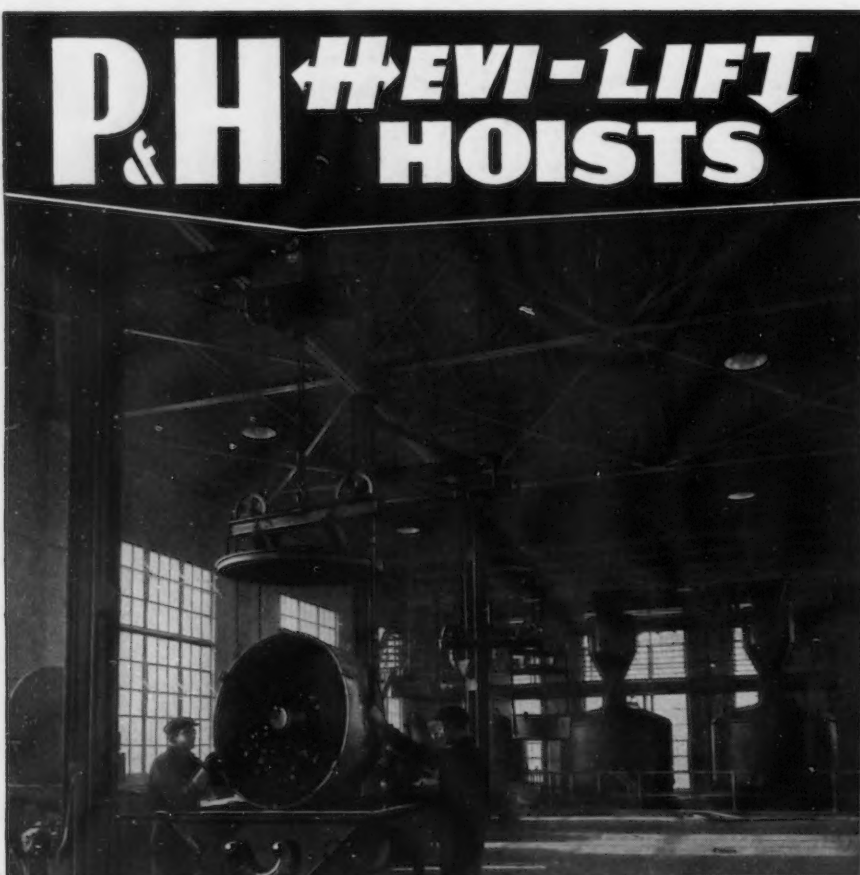
Mfg. Co. Division, Rome, N. Y., War Ordnance, brass forgings...	17,771.04
Harvey Metal Corp., Chicago, War Ordnance, brass forgings	26,390.00
John P. Kelly, Philadelphia, War Ordnance, bronze castings	54,934.47
National Lead Co., Perth Amboy, N. J., Portsmouth Navy Yard, pig lead	43,040.00
International Nickel Co., Huntington, W. Va., Navy S & A, nickel, copper	12,097.56

Machinery

General Motors Corp., Cleveland Diesel Engine division, Cleveland, Navy Office of Secretary, submarine propelling machinery	\$2,606,001.00
Fairbanks, Morse & Co., Chicago, and Beloit, Navy Office of Secre-	

tary, submarine propelling machinery	2,824,575.00
American Locomotive Co., Auburn, N. Y., Navy Office of Secretary, submarine propelling machinery	419,750.00
Struthers Wells - Titusville Corp., Titusville, Pa., Navy S & A, steering gears	38,684.00
General Motors Corp., Cleveland Diesel Engine division, Cleveland, Navy S & A, engine spares	17,830.98
Kearney & Trecker Corp., Milwaukee, Navy S & A, milling machines	15,236.60
R. K. LeBlond Machine Tool Co., Cincinnati, War Ordnance, lathe	13,921.00
Lodge & Shipley Machine Tool Co., Cincinnati, Navy S & A, engine lathes	18,876.00
Kearney & Trecker Corp., Milwau-	

kee, Navy S & A, milling machines	19,351.50
Hardinge Brothers, Inc., Elmira, N. Y., Navy S & A, lathes	10,413.00
Warner & Swasey Co., Cleveland, Navy S & A, turret lathes	21,361.90
Lloyd & Arms, Inc., Philadelphia, Navy S & A, engine lathes	41,895.00
Bucyrus-Erie Co., South Milwaukee, Wis., Interior, excavating machine	17,525.90
Goulds Pumps, Inc., Seneca Falls, N. Y., Navy S & A, purifiers ...	17,576.00
The Waterbury Tool Co., Waterbury, Conn., Navy S & A, hydraulic pumps	39,193.25
Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y., Navy, Yards & Docks, bridge cranes	125,600.00
Industrial Brownhoist Corp., Bay City, Mich., Navy, Yards & Docks, crane	46,007.00
Euclid Crane & Hoist Co., Euclid, Ohio, Navy, Yards & Docks, bridge cranes	70,130.00
Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y., Navy, Yards & Docks, wall and jib cranes	23,350.00
Quick-Way Truck Shovel Co., Denver, Agriculture, crane	10,599.30
McKiernan-Terry Corp., Harrison, N. J., Navy S & A, paravane machinery	20,696.00
Charles F. Elmes Engineering Works, Chicago, War Ordnance, accumulator, pumps	24,070.00
Barclay White Co., Philadelphia, War Ordnance, electric elevator ..	10,247.00
Lummus Co., New York City, and Honesdale, Pa., Navy S & A, air ejectors	44,820.00
Detroit Bevel Gear Co., Detroit, War Ordnance, pinions and racks ..	12,966.84
Fairfield Mfg. Co., Lafayette, Ind., War Ordnance, castings, steel ..	22,976.54
Singer Sewing Machine Co., New York City, Navy Purchasing Office, sewing machines	29,873.00



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Navy Department Awards More Orders

WASHINGTON — The Navy Department's Bureau of Supplies and Accounts has awarded contracts to these companies:

Fairbanks, Morse & Co., Chicago, cylinder equipment, liners, main engines, \$23,247; Kearney & Trecker Corp., Milwaukee, dial type milling machine, \$8,109; Aero Instrument Co., Cleveland, pitot-static tubes, \$6,900; Eclipse Aviation Division, Bendix Aviation Corp., Bendix, N. J., suction regulating valves, \$6,075; Dorsey C. Anderson, Philadelphia, arc welding sets, \$19,146; Snow & Petrelli Mfg. Co., New Haven, diesel engine parts, \$13,014; C. H. Wheeler Mfg. Co., Philadelphia, windlasses, spare parts, \$44,500; Lloyd & Arms Inc., Philadelphia, thread milling machines and equipment, \$15,406.

Enterprise Foundry Co., San Francisco, marine diesel engines and spare parts, \$105,900; Pump Engineering Service Corp., Cleveland, aircraft fuel pumps, \$11,339; National Machinery Co., Tiffin, Ohio, forming, rivet head machine, \$5,126; Rust Furnace Co., Pittsburgh, heat-treating furnace and parts, \$13,402.

Congressman Fish Defends Machine At Tool Engineers' Meeting

CLEVELAND—The American Society of Tool Engineers, at its semi-annual convention here Oct. 6 and 7, added impetus to the campaign for constructive appraisal of the machine. In addition to a new report from its fact finding committee which showed the machine is a labor creating device rather than a stimulator of unemployment, the society heard Congressman Hamilton Fish, of New York, assert that mass production has come to stay and will continue to grow.

James R. Weaver, president of the society, and director of equipment, inspection, purchases and test, Westinghouse Electric & Mfg. Co., advocated an unceasing drive against critics of the machine. Secretary Ford Lamb asserted that war, while stimulating trade, cannot permanently solve economic problems.

Man has not become a slave to the machine tool, as many persons believe, said the committee's report, presented by Prof. John Younger, Ohio State University, at the dinner meeting in Hotel Statler, Oct. 6. Lower production costs bring about increased sales and ultimately increased employment, he continued. "Put the machine tool back to work and the slack of unemployment will be taken up," was one significant passage in the report, which also touched upon the dangers of increased taxation on the machine tool, and brought out that by educating and training labor can be made more flexible.

Congressman Fish, recently returned from a trip abroad, pointed out that abuses in the capitalistic system have been and can be solved without recourse to any "isms." American labor has been better paid, housed, bedded and clothed and is more contented than labor in any other nation, he added.

"We professional and business men must reaffirm our faith, and change from the defensive to the offensive to uphold our system and free institutions which are challenged today," he declared, adding that he favors deportation of radicals. Expressing the belief that traffic in arms is "unmoral and vicious," Congressman Fish contended the Allies do not want arms and ammunition from the United States, although they do desire airplanes. "Half-way measures all lead to war," he said. "The American public wants the cash

and carry system and I am willing to vote for it. The big issue, however, is keeping America out of foreign wars."

About 300 persons attended the dinner meeting conducted by President Weaver. It was announced that the 1940 annual convention will be held in

New York City the second week of March. Tell Berna, general manager, National Machine Tool Builders' Association, and G. J. Hawkey, president, Cleveland Duplex Machinery Co. and president of the Cleveland A.S.T.E. chapter, spoke briefly.

A technical session Saturday morning in Hotel Statler was devoted to bearings, and was under the direction of Mr. Hawkey. First speaker was H. E. Ewart, assistant chief engineer, Bantam Bearings Corp., South Bend,



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Ind., who outlined principles of roller bearings, their action in the load zone, and discussed stresses over the contact area. He cited the progress made in ultra precision bearings. Such factors as requirements for accuracy, available space, loads and speeds, lubrication and costs, are of vital importance, said Mr. Ewart.

Discussing the application and use of plain bearings as applied to machine tools, Eugene Bouton, supervisor of time study, J. I. Case Tractor Works,

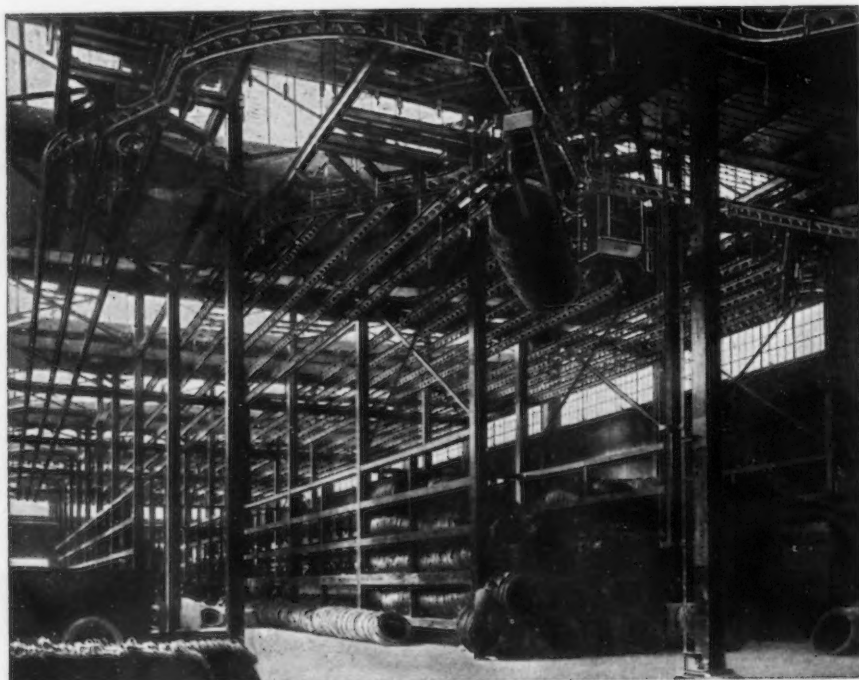
Racine, Wis., praised the contributions of all bearing manufacturers, told how more severe service conditions are being imposed on machine tools constantly, and expressed the viewpoint that the oil film bearing is essentially durable. He touched on vibration and chatter, the effect of tool pressures, and heat travel into the spindle. He urged more study of misapplications and failures.

The importance of rigidity was brought out by Karl L. Herrmann,

consulting engineer, South Bend, in an address titled "Bearings—Their Use and Misuse." Load carrying capacity of the plain bearing if made of proper materials, properly ground and rigidly mounted and well lined, is very high, he asserted.

S. L. Crawshaw, application engineer, Nuttall Works, Westinghouse Electric & Mfg. Co., presented an extensive roundup discussion paper, in which he emphasized the factors governing selection of bearings and said varying film thickness is a major consideration. He stressed the importance of standardization of ratings and paid tribute to the automobile industry for the progress it has helped make possible.

The meeting was thrown open to general discussion, in which participated Dr. M. Kronenberg, Cincinnati Milling Co.; A. B. Bok, chief engineer, Kent Owens Machine Co.; M. W. Helm, Timken Roller Bearing Co., and A. B. Willi, chief engineer, Federal Mogul Corp.



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Machine Tool Dealers Trying to Cope With Sudden Turn of Events

CLEVELAND—Machine tool sellers are taking all possible steps to meet the sudden turn of events during the past month which has brought back problems long out of the picture, it was shown at the Associated Machine Tool Dealers' convention here Oct. 5.

It was agreed that the present situation is one of the most unusual cycles ever encountered, for developments which took nearly two years to materialize after the outbreak of hostilities in 1914 have been greatly accentuated in the current war.

The interesting viewpoint of a machine tool user was presented to the members by the principal speaker at an informal dinner in Hotel Cleveland. J. R. Weaver, director of equipment purchases, inspection and tests, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and president, American Society of Tool Engineers, advanced many suggestions and touched on the need for definite plans for analyzing manufacturers' needs, changes in machine tool design, and the sellers' responsibility for complete service from beginning to end, including engineering, designing and foundation plans.

Psychology could very well be employed to better advantage in an attempt to help level out valleys and peaks, said Mr. Weaver. Among possible reasons for lack of buying machines in industry he listed: the threat to the machine; stability of design of apparatus; lack of new and more efficient machines; lack of skilled help to introduce more productive methods; and the vital role played by foremen and superintendents in making recommendations for new equipment.

There is a very definite need for more productive machine tools, continued Mr. Weaver, because of increased labor rates, shorter working hours, increased tax burdens and higher sales expense.

Sellers' organizations should be built up with good practical men, he said.

Pointing out that his own company is prepared, if necessary, to advance its buying program due to the current situation, Mr. Weaver asked whether sellers preferred to obtain this business in the next three months or to have it come through next year in the normal course of affairs.

Speaking on "What Price Machine Tools?" A. G. Bryant, retiring president of the Association and president, Bryant Machinery & Engineering Co., Chicago, urged that in order to keep the proper perspective the valleys should be kept in mind as well as the peaks.

"Now is the time for us to take inventory of our situation," said Mr. Bryant, "for we cannot remain for a very long period on a high plateau. We are now at the fourth peak in 20 years."

He expressed the opinion that war ultimately would prove a handicap rather than a benefit; stressed the necessity of caution on price increases; and emphasized the importance of maintaining sales morale. Most of the business being placed today is the result of intelligent and aggressive work on the part of salesmen in the past two or three years, he added.

"The machine tool industry, vital because it includes all the machinery on which most present-day equipment is produced, must in protection of itself and as a service to American business limit the amount of export sales which it can accept," said Mr. Bryant.

John Sauer, Jr., Peninsular Machinery Co., Detroit, was elected president of the Associated Machine Tool Dealers of America. Other officers are as follows: vice-president, F. B. Scott, Jr., Syracuse Supply Co., Syracuse, N. Y.; secretary-treasurer, George F.

Turner, Strong, Carlisle & Hammond Co., Detroit.

Those elected to the executive committee with terms expiring in 1942 were: D. N. Macconel, Machinery Sales Co., Los Angeles; L. H. Pratt, Henry Prentiss & Co., Inc., New York and G. J. Mawkey, Cleveland Duplex Machinery Co., Inc., Cleveland.

Elected to the executive committee with term expiring in 1940 was John P. Tierney, General Machinery Corp., Boston.

Industrial Employment Up Sharply in Toledo

TOLEDO — Industrial improvement has reached a new peak for 1939 here, with 19,086 employed in the 51 plants which make a weekly report. Gains have been shown in four of the last five weeks.

Libbey-Owens-Ford Glass Co. has put on a third shift of 350 workmen in its laminated safety glass plant, due to large demand for automobile glass.



Handle the *Loads* with *Loads* to Spare

IN this paper mill, as in many others, the Dodge equipped line shaft shown above delivers the power to a large dryer . . . along the course Dodge Clutches as well as Dodge Timken Bearings faultlessly control the movement of power . . . In this and thousands of other applications Dodge Clutches are thoroughly dependable . . . They are fully enclosed to exclude all dust and dirt . . . Proper proportioning and accurate balance permit high speed operation . . . ample safety factor to handle momentary overloads . . . For power transmission or machine application there is a rugged, longer-lasting Dodge Clutch for every industrial purpose.

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... when planning a new plant ... when adding a new department ... when installing new machinery ... when modernizing old equipment ... when designing new products.



Illustrated above is the simple method of adjusting Dodge Clutch.

Write for
Dodge Bulletin
No. A-200-H.



New Spiral Brazed Tubing Developed by A.G.A.

THE development of a steel tubing said to be comparable in quality and appearance to cold drawn seamless tubing and competitive in initial cost with joined seam tubing has been announced by AGA Metal Tube Co., 1029 Newark Avenue, Elizabeth, N. J.

The tubing, called Agalloy, is produced by joining spirally wound cold rolled steel strip in a hydrogen atmosphere high frequency induction furnace. Constant pressure is applied to the spiralled strip at the moment of joining and is not relieved until the temperature of the tubing is reduced

below the freezing point of the bonding material, thus assuring, it is stated, a perfect joint. Decarburization is entirely eliminated, the company claims, even in high carbon steels, due to the shortness of the heating and cooling cycles.

Agalloy can be produced in all straight carbon steels as well as in Cr-Va, Cr-Ni and Cr-Mo steels, and in sizes ranging from $\frac{3}{8}$ to $\frac{1}{8}$ in. outside diameter and with wall thickness varying from 0.042 to 0.010 in. The tubing, which is said to possess particularly uniform wall thickness, is available in various tempers, depending upon the use to which it is to be put. It is furnished cold drawn and can be bent, coiled, expanded, flared, flanged, swagged, spun, machined and welded. It will stand severe forming and with but little preparation the surface is adaptable to plating.

Average physical properties of annealed tubing made from SAE 1010 low carbon stock are as follows: Yield point, 27,000 to 30,000 lb. per sq. in.; tensile strength, 47,000 to 50,000 lb.; elongation, 38 to 40 per cent in 2 in., and reduction in area, 60 to 68 per cent. Hard drawn tubing from the same material will give a tensile value of from 80,000 to 85,000 lb. per sq. in. With high C and alloy steels it is reported that tensile strengths in excess of 200,000 lb. per sq. in. are obtainable by heat treatment. In all cases, the tensile strength of the tubing is always the same as the parent metal.

Agalloy is being used for golf shafts, fishing rods, radio antennas, lighting fixtures, automobiles, refrigerators, bicycles, ski poles and numerous household and industrial articles.



effects a stronger riveted joint at rates up to 3200 rivets an hour and creates additional savings by making possible the use of solid rivets.

The riveting is accomplished smoothly, automatically, and with precision. The setting action is actually one of "Coining". The motion proceeds from a fast approach to the riveting position to a slower setting action—giving the metal time to flow.

The Rivitor is shown here "staking" $\frac{3}{16}$ " x $\frac{5}{8}$ " lg. solid rivets for reel and blade assembly.

These machines ably handle many jobs in many industries. Submit samples of your riveting jobs. We should like to show you the type of solid rivet joints that can be effected automatically. We should like you to realize savings that will help you *toward your better product.*

this is a **TOMKINS-JOHNSON** *product*

Factory at 628 N. Mechanic St., Jackson, Michigan. Agents in principal cities. T-J products also include Air and Hydraulic Cylinders . . . Remote Control Systems . . . Rotating Chucks and Cylinders . . . Clinchers . . . Special Equipment . . . Brownie Coolant Pumps . . . T-J Die Sinking Milling Cutters.

American Steel Gets Preferential Rate in Argentina

WASHINGTON—A preferential exchange rate for a number of iron and steel products imported by Argentina has been made effective, according to a cable received by the Commerce Department.

The list includes rolled iron and steel; tin plate; iron and steel pipe; wire (except galvanized and barbed) and cable; fabricated and ornamental iron and steel; other metals; electrolytic copper; and copper and bronze pipe.

The Exchange Control Office in Argentina, according to the cable, has classified these products as coming under the preferential rate of 15 pesos to the pound, or 3.7313 pesos to the dollar.

First Goering Stack Blown In; Accidents Cut Soviet's Output

HAMBURG (By Mail)—The first blast furnace of the new Hermann Goering works went into production the third week of September and four other 800-ton units are scheduled to be blown in by Jan. 1 when the new steel plant near Linz, in upper Austria, with a capacity of 1,000,000 metric tons annually, will also have begun operations.

Figures on German steel production will not be released during the next few months. In Russia iron and steel produced in June and July declined sharply from May and was 7 per cent under production in the corresponding months of 1938, this drop, according to "Industrija," being due to accidents and damages to machinery. Production of steel in Bohemia-Moravia was 134,883 metric tons in July, compared with 134,538 tons in June while iron output was 97,612 tons against 95,228 tons. Steel output from that area is only slightly lower than in 1938 when the Trince (Olsa) district was producing for Czechoslovakia.

July production of iron ore in Germany was 1,394,093 tons, an increase of 115,000 tons above June while manganese production has tripled since 1935. Manganese ore is an important item in the recently concluded Russian-German trade agreement by which the Soviet will buy 200 million marks of German products, including 48 million marks of machinery, 3.7 million marks of steel, and 6 million marks' worth of small hardware products. Germany will import about 20 million marks of manganese ore from the Soviet.

The Swedish iron and steel industry has not profited from the war as much as expected. While France has bought considerable quantities of pig iron and Great Britain large quantities of steel, Sweden's export trade to other countries is smaller. The Reich, although maintaining its purchases of iron ore, which it can get via the Baltic Sea, has bought only small quantities of iron. Nevertheless Swedish prices are firm and the domestic trade is satisfactory. The Scandinavian countries are suffering from stoppage of motor car traffic. Germany is again supplying coal to Sweden from the Silesian (former Polish) coal fields.

Italy's Consumption Limited

In Italy consumption of steel has been further restricted and steel rail-

ings in parks and gardens have been abolished, while all bridges under a certain length must be made of stone. Some steel being sold by Italian merchants to Africa and the Far East (no sales yet have been made to South America) is German steel which can be conveniently shipped from mills in Austria or Moravia to Trieste. As the British have not yet included Italy in the supervision of the trade (inter-

ceptions by the British fleet), an increasing volume of goods is being shipped from Trieste and Genoa.

Many European exporters are now selling in dollars due to fluctuations in the British pound. Iron and steel export prices are rising. The average advance of quotations is £1 7s. 6d. for bars and joists, £1.12.6 for plates and hoops and £1.10 for sheets.

Export trade in machine tools is brisk in Germany and cannot be satisfied. Total exports from the Reich for the first half of 1939 were 53,344 tons as compared with 43,869 tons in the like period of 1938. The value of

McKAY TUBE MILLS (ELECTRIC WELD)

McKay Tube Mills—built in a complete size range—all possess certain characteristic design features which have proven of definite value under actual production conditions. We list a few of the outstanding features:

SINGLE UNIT CONSTRUCTION: Forming Units—Welder—Flash Trimmer—Sizing and Straightening Units and Cutoff are mounted on a one piece welded bed plate, heavily reinforced—with the accurate alignment shoulders required—permanently machined onto the top surface. This makes the machine an entirely self-contained unit, with none of the field alignment problems which occur where separate units are used.

FLOOR SPACE REQUIREMENTS: Single unit construction cuts floor space requirements in half. Machine illustrated will make up to 1½" tube—space required 21'0" by 6'0".

McKAY FORMING ROLL DESIGN: Maintains accurate seam alignment, necessary for good seam weld. It also produces a smooth tube, with size maintained closer than commercial tolerance requirements.

CENTRALIZED CONTROLS: Heat, speed and pressure controls placed for maximum convenience of operator.

QUICK CHANGE-OVER: Actual production conditions prove that a complete change-over from one size tube to another can be made in less than three hours by regular operator and helper. This is because

McKay construction includes enough auxiliary equipment so that units may be interchanged without disturbing vital settings.

McKAY "McKROMETER" ROLL PRESSURE ADJUSTMENT: (Covered by U. S. Patent 2,122,615). Allows actual recording of correct pressure settings at each pass for each diameter and gauge tube.

HIGH SPEED WELDING: Latest type high speed electric resistance welder, developed by welding engineers, gives highest speeds consistent with quality of product and economical welding method.

CUT-OFF: High speed rotary head or rotary saw available, to suit requirements.

The above represents only a few of the advantages of McKay equipment. Call on us for complete information, samples and demonstration.



THE McKAY MACHINE CO.
Engineers and Manufacturers of
SHEET, TIN AND STRIP MILL EQUIPMENT
YOUNGSTOWN, OHIO

exported machine tools was up 23 per cent in the first six months of this year. A total of 123,567 metal working machines were exported in the first half compared with 155,455 in the comparable period of 1938.

German scrap shipments from Spain principally from sunk vessels, destroyed trucks, etc., have been resumed. The scrap trade is quiet with largest imports from Holland, Denmark, Switzerland and the Baltic states.

Germany Has Been Largest Steel Exporter Since 1936

ENGLAND, France, Germany and Poland have been among the chief steel exporting countries of the world since January, 1936. Total exports of steel from those countries amounted to an annual average of 6,990,000 gross tons during the period, somewhat more than half of

the aggregate of world exports of steel.

Recent disruption of normal commerce, however, is forcing steel importing countries to shift their sources of supply from the belligerent nations which previously supplied a substantial portion of their needs to other steel exporting countries.

These facts, developed by the American Iron and Steel Institute in a study of data published by the British Iron and Steel Federation, help to explain the increasing volume of foreign inquiries for American steel since the outbreak of the war in Europe.

Exported 45 Per Cent of Total

The total tonnage of steel exported by England, France, Germany and Poland from January, 1936, through June, 1939, was nearly four times the amount of steel exported from the United States during the same period, and is equivalent to 23 per cent of the total output of steel for sale by the steel industry of the United States during that period.

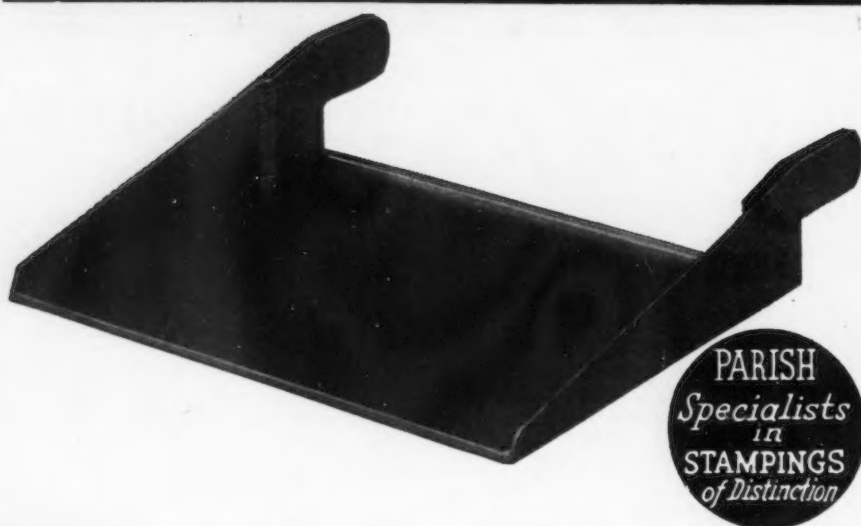
Of the belligerent nations, Germany has been the largest steel exporter, exports since 1936 amounting to 45 per cent of the total tonnage of steel exported from the four countries. England exported 30 per cent of the total, France 21 per cent and Poland 4 per cent.

Aside from the United States, only Belgium and Luxemburg, Sweden, Canada and Hungary rank on past records among the exporters of steel which might be available to take up any important part of the slack caused by the possible reduction of exports by the nations now at war. Russia, India and the Netherlands are exporters of pig iron, but relatively little pig iron has been exported from England, France, Germany and Poland.

The average annual exports of steel from neutral steel-making nations outside of this country have not exceeded an estimated 5,000,000 tons in any recent year, or equal to a little more than 70 per cent of the average annual exports of steel from the belligerent countries.

In the years 1936 to June, 1939, inclusive, the United States exported an average of 1,862,000 tons of steel a year, chiefly to countries with inadequate steel making facilities.

HE WANTED IMPROVEMENT



THE inclinator step illustrated is of pressed steel $\frac{1}{8}$ " thick; $15'' \times 15\frac{1}{2}'' \times 3\frac{3}{8}''$ high. The welded end lugs provide the necessary strength, at less cost than is feasible by any other method.

This is typical of what Parish engineers are able to accomplish, by a skillful combination of stamping and welding, to provide better parts of improved appearance and lowered final cost.

Whether the stamping be simple or complicated, large or small, complete as it comes from the press or involving building up thru other operations, we welcome the opportunity to discuss the problem with you.

PARISH PRESSED STEEL CO., READING, PA.

Pacific Coast Rep.: F. Somers Peterson Co., 57 California St., San Francisco, Cal.

Welding Society Presents Course on Metallurgy

THE New York section, American Welding Society, in cooperation with the Polytechnic Institute of Brooklyn will present a series of 10 lectures during the fall and winter of 1939 and 1940 on the A, B, C of metallurgy as it relates to welding, beginning on Tuesday, Nov. 21.

The purpose of the course is to familiarize members of the welding industry with the composition and structures of steel and to show how the steel is affected by the varied conditions of heat and stress in welding; to explain the mysteries of heat treatment and to point the way in which metallurgy can be used to control the welding processes.

The course will apply to all processes of welding. A small textbook will be prepared especially for the members of the course. A charge of \$5 will be made to non-members. Reservations should be made by application to George V. Slottman, secretary of the New York section, Air Reduction Sales Co., 60 East 42nd Street, New York.

Safety Congress to be Held In Atlantic City Oct. 16-20

FOR five days beginning Oct. 16, Atlantic City will be host to 10,000 delegates to the 28th annual National Safety Congress.

The congress program ranges alphabetically from aeronautics through 24 sections to wood products. A sizable and important group is the iron and steel section, which will be attended by safety engineers and personnel men from virtually all producers and many fabricators of iron and steel.

Trends in Press Design Discussed by Longfield

THE general trend toward the "streamlining" of power presses has been carried out as a step-by-step development by power press manufacturers—with many important advantages accruing to power press users through modernization, according to William Longfield, chief engineer, Cleveland Punch & Shear Works, who last week addressed the Detroit section, the American Society of Mechanical Engineers. Admitting that power press manufacturers have unquestionably been influenced by the general trend to streamlining exteriors in other lines of equipment, Mr. Long-

field declared that industry had gained rather than sacrificed mechanical advantages in redesigning products to conform to present day needs.

The 270 engineers who heard Mr. Longfield's address on "Advanced Sheet Metal Stampings" assembled in the Ford Rotunda Theatre, Dearborn, Oct. 3, under the chairmanship of William R. Kales, vice-president, Whitehead & Kales Co. Earlier in the day the A.S.M.E. members made a tour through the new pressed steel

building of the Ford Rouge plant and had dinner in the Ford administration building.

Much of the improvement in presses is attributable to the difference between the automobile stamping plant of today and that of a few years ago, the speaker declared, adding that in early body shops draws in steel of from 3 to 6 in. were considered remarkable. He traced press design from those days to the present, plotting the course of larger and heavier



**GREATER MILEAGE
CRANE WHEELS**

The principal advantages of Standard rolled steel crane wheels are greater strength and toughness and better adhesion to the rail with a minimum of wear on the wheel and rail.

The open hearth steel used in these wheels is produced in our own furnaces subject to close metallurgical control.

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Heavy Springs
Rolled Rings
Gear Blanks

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FOR EVERY MECHANICAL NEED

COIL SPRINGS
FLAT SPRINGS
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WIRE FORMS

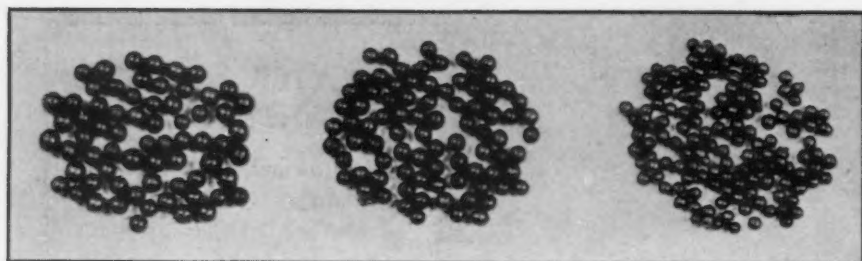
AMERICAN is organized for swift and efficient production in any quantities required. Our own tool department, long rows of automatic machines, modern hand-working machinery for smaller runs, hundreds of tons of raw materials kept constantly in stock—all combine to assure dependable and speedy manufacture.

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SPECIAL SPRINGS
from Every Type of Wire up to & including 1/2 dia.

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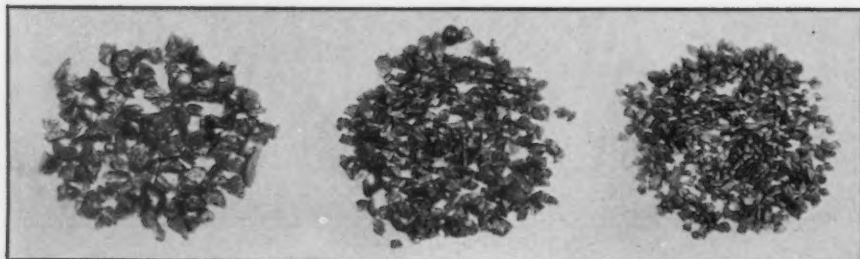
IN the period of one year we have built up a very large business with our Heat-Treated Steel Shot and Heat-Treated Steel Grit. This was accomplished on purely a quality product. Our many hundreds of customers, nationally known Concerns, are using our Shot and Grit, and sav-

ing money every day, blasting faster with less wear of abrasive. Our heat treating insures toughness and strength, fast blasting and long wear-ing. Try it in your machine and prove the truthfulness of these statements.
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presses and the improvement that has taken place in the materials and parts used in the manufacture of power presses such as anti-friction bearings, high-strength iron, better steel castings, V-belt drives, high-speed hydraulic pumps and valves, centralized lubrication, herringbone gears, better brake linings, air valves, electrical controls, etc. Mention was also made of some of the contributing factors to press operation and design, such as the development of steels with better drawing qualities, and improvement in die design and die materials extending their useful life.

National Founders Meeting Scheduled for Nov. 15-16

THE annual meeting of the National Founders' Association will be held this year on Nov. 15 and 16 at the Waldorf-Astoria Hotel, New York, according to an announcement by F. R. Hoadley, of Atwood Machine Co., president.

Among the subjects scheduled for discussion at the meeting are the possible effects of the war on American industry, the investigation of the National Labor Relations Board and future trends of manufacturing activity.

A. O. Smith Employment Highest in Two Years

MILWAUKEE—Employment at the A. O. Smith Corp. reached the highest level in at least two years when 4700 persons were reported on the payroll as of Oct. 1. Expanding volume in the corporation's various lines had led to the re-employment of nearly 1000 persons since Sept. 15 when approximately 3800 were at work in its shops. The present figure is about 1000 higher than that of a year ago.

Reliance Steel Co. Expands in Detroit

DETROIT—The Reliance Steel Co., which recently transferred its principal operations in the Detroit area to a new \$150,000 plant at 13770 Joy Road, has announced plans for construction of a 20,000 sq. ft. addition to accommodate its coil steel division. Contracts for this work have been awarded to the Austin Co., designer and builder of the new plant in which all of the company's Detroit operations will soon be centralized. The addition will give the plant a total approximate length of 500 ft. The building is 127 ft. wide, with two 60-ft. crane runways each equipped with two 10-ton traveling cranes.

Government Asks Bids On 400,000 Lb. of Tin

WASHINGTON—The Treasury Department's Procurement Division last week called for bids on Nov. 6 for 200,000 lb. of grade A pig tin and an equal amount of grade B pig tin, to be delivered f.o.b. cars, United States Army General Depot, Columbus, Ohio; Baltimore (Md.) Harbor; or New York Harbor, N. Y.

Although these specific amounts were designated, the invitations said that consideration will be given to such greater quantities as may be offered in the event bidders are in a position to quote on larger quantities. Authority for the purchase is contained in the Strategic and Critical Materials Act, under which invitations to bid on manganese, chromium, tungsten and rubber previously had been sent out.

General Electric Orders Gain Nearly One-Third

ORDERS received by General Electric Co. during the third quarter of 1939 amounted to \$79,510,000, compared with \$60,533,000 during the same quarter last year, an increase of 31 per cent, President Gerard Swope has announced.

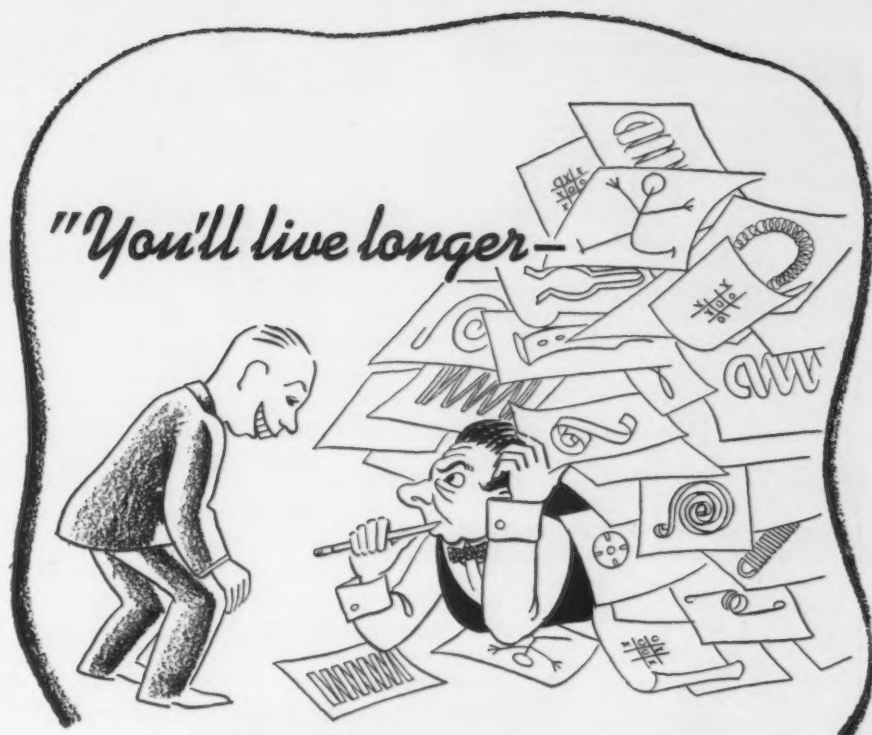
For the first nine months this year orders received amounted to \$248,582,000, an increase of 32 per cent over the \$188,757,000 received during the same period a year ago.

Pittsburgh Coke & Iron Lets \$300,000 Contract

PITTSBURGH—The Pittsburgh Coke & Iron Co., Pittsburgh, has let a contract to the Koppers Co. for the erection of a hydrogen sulphite plant which will be used to recover the sulphur in its coke oven gas. At the same time, a contract has been given to the Chemical Construction Co. for the manufacture of this sulphur into sulphuric acid used by the company in the manufacture of sulphate of ammonia. The two contracts aggregate over \$300,000.

\$450,000 Steam Shovel Built

MARION, OHIO.—A giant steam shovel with dipper capacity of 35 cu. yd. and costing approximately \$450,000, will be completed here around Jan. 1. It is to be used for strip coal mining in Indiana. With other business on hand the 1325 employees of the Marion Steam Shovel Co. are believed to be assured work well into 1940.



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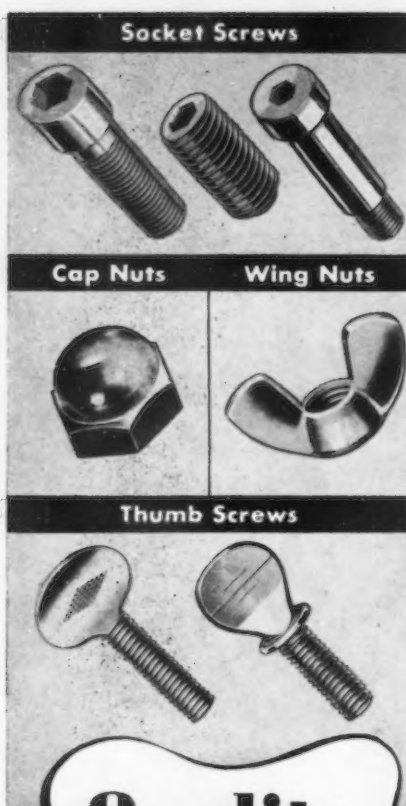
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Steel Output in September 4,231,310 Tons, 12% Over August

STEEL ingot production jumped 12 per cent during September to a total of 4,231,310 gross tons, as against the revised figure of 3,763,418 tons in August, according to the American Iron and Steel Institute.

September was the fourth consecutive month to show an increase over the preceding month in the tonnage of steel ingots produced. The September tonnage was the highest for any month since September, 1937, when 4,289,507 tons was produced.

The September tonnage was 60 per cent above the total of 2,647,129 gross tons produced in September a year ago. In the first nine months of this year, a total of 29,748,042 tons of ingots was produced, 66 per cent above the total for the corresponding period of 1938 and 7 per cent more than the tonnage produced in the whole of last year.

During September the industry operated at 72.41 per cent of capacity, as against 62.22 per cent in August, and 46.09 per cent in September, 1938. Over the first nine months of this year the industry's operations averaged 55.86 per cent of capacity, compared

with 34.29 per cent in the corresponding period of last year.

Ingot production averaged 988,624 tons a week in September, as against 849,530 tons a week in August and 618,488 tons a week in September, 1938. For the first nine months of 1939 an average of 762,770 tons of ingots was produced weekly, which compares with the average of 460,183 tons a week during the corresponding months of 1938.

Japan Largest Importer of U. S. Machine Tools, First Half

EXPORTS of metalworking machinery from the United States continued to rise during the first six months of 1939, reaching the all time post-war high of \$55,685,450 as compared with \$51,557,933 for the corresponding period of 1938, according to the Department of Commerce. Japan was the chief receiver of these American products, replacing the Soviet Union, the most important market for United States metalworking machinery in 1938. Shipments to Japan rose from \$13,237,230 in the first six months of 1938 to \$14,723,809 in

PRODUCTION OF OPEN-HEARTH AND BESSEMER STEEL INGOTS
 (Reported by Companies Which in 1936 Made 98.67 Per Cent of the Open-Hearth and 100 Per Cent of the Bessemer Ingot Production)

	Reported Production (Gross Tons)		Calculated Production All Companies		Number of Weeks	Per Cent of Capacity
	Open-Hearth	Bessemer	Monthly	Weekly		
1938						
January	1,612,469	99,941	1,734,165	391,459	4.43	29.17
February	1,551,082	125,443	1,697,452	424,363	4.00	31.63
March	1,821,935	157,687	2,004,204	452,416	4.43	33.72
1st Quarter ..	4,985,486	383,071	5,435,821	422,692	12.86	31.50
April	1,763,154	131,594	1,919,042	447,329	4.29	33.34
May	1,647,231	130,540	1,800,877	406,519	4.43	30.30
June	1,493,564	118,638	1,632,843	380,616	4.29	28.36
2nd Quarter ..	4,903,949	380,772	5,352,762	411,434	13.01	30.66
1st 6 Months..	9,889,435	763,843	10,788,583	417,031	25.87	31.08
July	1,821,740	127,932	1,974,317	446,678	4.42	33.29
August	2,309,207	196,739	2,537,102	572,709	4.43	42.68
September	2,407,707	206,937	2,647,129	618,488	4.28	46.09
3rd Quarter ..	6,538,654	531,608	7,158,548	545,205	13.13	40.63
9 Months	16,428,089	1,295,451	17,947,131	460,183	39.00	34.29
October	2,844,450	223,158	3,105,985	701,125	4.43	52.25
November	3,312,475	201,196	3,558,363	829,455	4.29	61.81
December	2,932,272	158,912	3,130,746	708,314	4.42	52.79
4th Quarter ..	9,089,197	583,266	9,795,094	745,441	13.14	55.55
Total	25,517,286	1,878,717	27,742,225	532,072	52.14	39.65
1939						
January	2,986,455	147,494	3,174,352	716,558	4.43	52.48
February	2,755,130	196,186	2,988,649	747,162	4.00	54.72
March	3,167,782	194,694	3,405,370	768,707	4.43	56.30
1st Quarter ..	8,909,367	538,374	9,568,371	744,041	12.86	54.49
April	2,731,451	205,771	2,974,246	693,297	4.29	50.78
May	2,715,940	170,156	2,922,875	659,791	4.43	48.32
June	2,898,552	187,478	3,125,288	728,505	4.29	53.35
2nd Quarter ..	8,345,943	563,405	9,022,409	693,498	13.01	50.79
1st 6 months..	17,255,310	1,101,779	18,590,780	718,623	25.87	52.63
July	2,893,916	229,380	3,162,534	715,505	4.42	52.40
August	3,469,453	246,952	3,763,418	849,530	4.43	62.22
September	3,881,564	297,128	4,231,310	988,624	4.28	72.41
3rd Quarter ..	10,244,933	773,460	11,157,262	849,753	13.13	62.23
9 Months	27,500,243	1,875,239	29,748,042	762,770	39.00	55.86

Figures for August, 1939, have been revised.

the same period of 1939. Exports to Manchuria showed an even greater rise, from only \$237,690 in 1938 to \$1,486,786 in 1939. Together, Japan and Manchuria took almost 30 per cent of United States exports of metalworking machinery in the period, representing roughly 15 per cent of the total production of this American industry.

Exports to the United Kingdom rose sharply from \$8,134,495 in the first six months of 1938 to \$12,267,511 in the first half of 1939. The United Kingdom, by the end of 1939, may again be the outstanding market for this equipment, as in both May and June more shipments were sent to the United Kingdom than to Japan. Metalworking machinery exports to the Soviet Union dropped from \$16,077,369 in the first half of 1938 to \$9,776,201 in the first six months of 1939. Last year Germany, previously the chief supplier of machinery to the Soviet Union, was unable to make deliveries of machinery wanted by the Russians, with the result that American sales to the Soviet Union rose to record heights. However, there was some indication previous to the outbreak of war that Germany was again in a position to supply this market, and several large Russian orders have recently gone to German firms.

Shipments of metalworking machinery to France during the January-June period jumped to \$7,892,988 as compared with only \$2,218,515 in the same period of last year. On the basis of reports from the machine tool industry concerning foreign orders, it is expected that shipments to France will increase for some time to come. Shipments to the four chief markets, Japan (including Manchuria), United Kingdom, Soviet Union, and France, accounted for 82.9 per cent of the total United States exports of metalworking machinery for the first half of this year.

Showing marked gains in practically all types, the July exports of power-driven metalworking machinery totaled \$9,358,876 compared with \$6,488,415 in July, 1938.

American Car & Foundry Gets \$6,000,000 Tank Order

WASHINGTON—The War Department has awarded the American Car & Foundry Co., New York, a \$6,000,000 contract for 329 high speed 12-ton tanks of the latest design. To cost about \$17,890 each, the new tanks are being ordered as part of the Army's mechanization program which calls for further purchase of scout cars, tractors, bomb trailers and trucks. The order is being handled by the Rock Island (Ill.) Arsenal.



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Iron and Steel Exports (In Gross Tons)

	August		Eight Months Ended August	
	1939	1938	1939	1938
Pig iron	9,214	19,756	43,168	245,907
Ferromanganese and Spiegeleisen	27	2	212	229
Other ferroalloys	504	95	1,316	798
Scrap, iron and steel	290,346	106,867	2,413,610	2,017,638
Scrap, tin plate	1,139	908	11,176	10,427
Waste-waste tin plate	411	238	6,128	4,684
Pig iron, ferroalloys and scrap	301,611	127,866	2,475,610	2,279,583
Ingots, blooms, billets, sheet bars	4,960	539	63,796	136,736
Ingots, etc., alloy steel, including stainless	111	178	6,727	5,160
Skelp	9,039	2,614	17,260	10,255
Wire rods	1,477	357	15,786	18,636
Semi-finished steel	15,587	3,688	103,569	170,787
Bars, plain and reinforcing	11,474	11,516	98,180	99,041
Bars, alloy steel	882	269	8,708	2,857
Bars, stainless steel	15	53	227	277
Iron bars	41	49	414	900
Plates, plain and fabricated	20,736	13,080	167,813	148,477
Plates, alloy steel	181	22	1,180	2,054
Plates, stainless	33	7	84	143
Sheets, galvanized steel	9,886	4,539	62,609	45,903
Sheets, galvanized iron	526	406	3,937	2,678
Sheets, black, plain steel	26,426	11,650	178,370	124,978
Sheets, alloy steel	408	179	2,351	2,476
Sheets, stainless	41	120	593	1,029
Sheets, black iron	727	881	4,610	4,981
Hoops, bands, strips, plain steel	9,758	4,819	48,077	37,530
Hoops, bands, strip steel alloy	69	28	357	216
Hoops, bands, strip steel, stainless	51	14	680	376
Tin plate and taggers' tin	27,169	9,163	148,388	111,193
Terne plate (incl. long ternes)	591	372	2,868	3,289
Structural shapes, plain material	8,771	4,032	60,518	59,870
Structural material, fabricated	3,096	2,841	21,689	25,113
Sheet piling	1,339	599	4,713	2,551
Tanks, steel	1,661	5,331	17,667	25,199
Steel rails	3,165	12,665	41,830	53,392
Rail fastenings, switches, spikes, etc.	539	1,943	9,968	8,612
Boiler tubes	808	637	5,102	6,066
Casing and oil line pipe	6,786	3,567	47,149	54,439
Pipe, black and galv. welded steel	2,584	1,878	24,245	14,916
Pipe, black and galv. welded iron	682	684	4,440	3,446
Plain and galvanized wire	4,456	2,383	34,028	29,187
Barbed wire and woven wire products	3,752	3,365	30,931	20,428
Wire rope and other products	823	681	8,008	6,872
Nails and tacks	2,259	2,036	16,437	15,402
Bolts, nuts, rivets and washers except track	570	565	5,195	5,344
Other finished steel	829	93	5,136	2,334
Rolled and finished steel	151,134	100,167	1,066,502	921,569
Cast iron pipe and fittings	3,860	6,591	22,980	21,117
Malleable iron screwed fittings	317	297	2,464	2,087
Carwheels and axles	2,238	1,779	17,736	15,906
Castings, iron and steel	403	448	3,668	4,171
Castings, alloy steel, incl. stainless	116	63	1,072	580
Forgings, plain	1,697	913	7,993	5,412
Forgings, alloy steel, incl. stainless	85	10	1,375	256
Castings and forgings	8,716	10,101	57,288	49,529
Total	477,078	242,122	3,702,969	3,421,568

Iron and Steel Imports (In Gross Tons)

	August		Eight Months Ended August	
	1939	1938	1939	1938
Pig iron	3,204	961	25,247	22,262
Sponge iron	244	8	1,222	331
Ferromanganese ¹	2,355	1,675	22,848	8,053
Spiegeleisen	1,007	955	18,849	5,982
Ferrochrome ²	93	54	111	99
Ferrosilicon ³	38	1	967	369
Other ferro-alloys ⁴	3,729	1,637	200	1
Scrap	10,670	5,290	21,867	3,441
Pig iron, ferroalloys and scrap	7	7	91,311	40,538
Steel ingots, blooms, etc.	29	73	11	7
Billets, whether solid or hollow	775	220	254	451
Wire rods	811	293	6,513	3,018
Semi-finished steel	330	248	6,778	3,476
Concrete reinforcement bars	129	56	2,330	910
Hollow steel bars	2,163	1,546	971	532
Merchant steel bars	34	105	14,023	12,928
Iron slabs	1	151	435	440
Boiler and other plate (including skelp)	22	294	21	271
Sheets, skelp, and saw plate	1	1	1,298	5,579
Die blocks or blanks, etc.	5	24	80	67
Tin plate, taggers' tin and terne plate	4,770	2,335	42	79
Structural shapes	222	232	35,512	26,789
Sashes and frames	363	1,131	5	.....
Sheet piling	441	1,557	462	.....
Rails and track material	2,939	2,626	4,720	2,215
Welded pipe	2,010	908	4,263	3,919
Other pipe	1,621	1,068	24,818	15,208
Cotton ties	209	118	6,322	5,957
Other hoops and bands	5	1	14,456	11,637
Barbed wire	309	154	13,491	9,586
Round iron and steel wire	113	156	1,604	802
Telegraph and telephone wire	103	96	7	6
Flat wire and steel strips	614	831	2,117	1,675
Wire rope and strand	13	1	1,309	1,374
Other wire	62	52	1,301	1,015
Nails, tacks, and staples	16,478	13,691	6,355	4,928
Bolts, nuts, and rivets	4	14	79	94
Horse and mule shoes	295	173	307	300
Rolled and finished steel	70	580	136,328	106,311
Malleable iron pipe fittings	.....	.....	112	56
Cast iron pipe and fittings	.....	.....	696	1,071
Castings and forgings	.....	.....	948	2,302
Total	28,328	20,041	236,173	153,754

¹ Manganese content; ² chrome content; ³ silicon content; ⁴ alloy content.

Iron-Steel Imports in August only 24,599 Tons

WASHINGTON—Iron and steel imports during August decreased to 24,599 gross tons as compared with 27,516 tons in July but increased in value to \$1,354,288 from \$1,285,390 in July. In August, 1938, imports totaled 18,404 tons valued at \$1,182,741.

In point of tonnage, the principal product imported during August was 4770 tons of structural shapes. Belgium supplied 3606 tons; France, 1144 tons. Pig iron was second with 3204 tons, of which 2211 tons came from British India and 993 tons from Canada. A 2939-ton trade in cotton ties comprised 1788 tons from Germany; 655 tons from Belgium. Norway was the point of origin of 1967 tons of ferromanganese imports which aggregated 2355 tons, valued at \$202,043.

Spiegeleisen imports totaled 1007 tons valued at \$34,436. Canada shipped 707 tons; Norway, 300 tons. Imports of manganese ore (35 per cent or over) aggregated 18,048 tons valued at \$438,925. Gold Coast shipped 9626 tons; Brazil, 3585 tons; Cuba, 3272 tons; and Russia 1548 tons.

Scrap imports were up to 3729 tons from the 3335-ton trade in July, with Canada, usually the chief source of supply, shipping 3318 tons.

August Imports of Iron and Manganese Ores

	August		Eight Months Ended August	
	1939	1938	1939	1938
Canada	465	135	2,211	599
Cuba	21,597	21,000	15,533	11,257
Chile	145,700	110,900	6,473	5,905
Spain	.....	.....	3,041	1,495
Norway	7,891	9,504	.....	.....
Sweden	36,818	18,942	.....	.....
French Africa	.....	.....	.....	.....
Russia	.....	.....	1,548	13,366
India	.....	.....	.....	2,783
Brazil	.....	.....	3,585	.....
Gold Coast	.....	.....	9,626	8,107
Other countries	91	11,635	15	18
Total	212,562	172,116	18,048	31,171

United States Imports of Pig Iron by Countries of Origin

	August		Eight Months Ended August	
	1939	1938	1939	1938
United Kingdom	.....	.....	.....	42
British India	2,211	599	15,533	11,257
Germany	.....	.....	6,473	5,905
Netherlands	.....	193	3,041	1,495
Canada	993	144	.....	.....
France	.....	.....	.....	.....
Belgium	.....	.....	.....	.....
Norway	.....	.....	.....	3,538
Sweden	.....	25	100	25
Russia	.....	.....	.....	.....
All others	.....	.....	100	.....
Total	3,204	961	25,247	22,262

Government Holds To Specifications on Manganese Ore

WASHINGTON—Pressure from domestic producers so far has not caused a change in specifications for manganese ore for which the Procurement Division, Treasury Department, will open bids on Oct. 19, but it is reported that the revision may be made. Domestic interests insist that the requirement for 48 per cent ore will shut many if not most of their mines and that the Government will have difficulty in getting foreign ore. On the other hand the Government specifications provide for a grade that is necessary for the making of standard ferromanganese and should a lower content of ore be purchased it would require beneficiation, adding to costs.

Senator Murray, Democrat, of Montana, has asked President Roosevelt to investigate the specifications. The Senator said they are preventing manganese producers in Montana and other states from selling manganese ore to the Government and predicted

it would have difficulty in getting foreign ore. Montana, he said, can compete successfully with manganese producing areas in foreign countries and get its share if it is not handicapped by the specifications. The specifications, he added, are "so designed as to prevent Montana from getting a square deal."

Meanwhile Secretary of the Interior Ickes has announced that the Bureau of Mines, in cooperation with the Geological Survey, is "conducting an intensive survey to determine the possibility of producing in the United States strategic minerals which have been obtained chiefly from foreign sources."

The survey covers antimony, chrome, manganese, tin and tungsten deposits.

Eight projects are being explored as follows: Valley County, Idaho—antimony deposits; Sweetgrass and Stillwater Counties, Mont.—chrome deposits; Casper Mountain, Wyo.—chrome; John Day, Ore.—chrome; Olympic Peninsula, Wash.—manganese; Tinton, S. D.—tin; Catron County, N. M.—tin; Nightingale District, Nev.—tungsten.

Sheet & Tube Orders Another Fretz-Moon Pipe Mill

YOUNGSTOWN—Another Fretz-Moon continuous gas butt weld pipe mill, the second purchased recently, has been ordered by Youngstown Sheet & Tube Co. and will be installed at the Indiana Harbor plant, it is understood. The company in late July ordered a Fretz-Moon mill for installation here in Youngstown.

Great Britain Removes Duty on Pig Iron

LONDON, Oct. 10 (By Cable)—United Kingdom import duties on all grades of pig iron have been removed as from today.

U. S. Army Purchasing Officers at Conference

WASHINGTON—Some 50-odd regional purchasing officers for the War Department started a week of conferences on Monday aimed at further developing plans to buy quantities of the new semi-automatic rifle and other "critical" items for which

Congress appropriated \$110,000,000 last session.

Some reports were that the conference, called by Assistant Secretary of War Louis Johnson, may involve putting certain plants on a 24-hr. basis but that the plans had not yet been approved by the White House.

Chilean Iron Ore May Go On U. S. Free List

WASHINGTON—Iron ore, including mangiferous ore, may be bound on the free list of imports under a reciprocal trade agreement with Chile, negotiations for which are under way. The State Department's Committee on Reciprocity Information has fixed Nov. 11 as the deadline for filing briefs and Nov. 27 for beginning public hearings.

In 1938 Chile shipped \$2,853,000 worth of iron ore to this country while United States exports of metals and manufactures to Chile were valued at \$4,474,000. The most important iron and steel item in point of tonnage was \$320,000 worth of bars and rods. Exports of machinery and vehicles in 1938 were valued at \$8,910,000, of which industrial machinery represented a value of \$2,835,000.

Vermont Group to Show New Machine Tools

A COMMUNITY machine tool show will be held Oct. 16-19 by the Fellows Gear Shaper Co., the Jones & Lamson Machine Co. and the Bryant Chucking Grinder Co., of Springfield, Vt., and by the Cone Automatic Machine Co., Inc., of Windsor, Vt. The newest equipment, which was to have been shown at the Cleveland Machine Tool Show will be demonstrated in actual operation.

J & L Claims Strip Record

PITTSBURGH—What is believed to be a world's record on cold rolled sheet production was made on the day shift, 8 to 4, Oct. 8, at Jones & Laughlin Steel Corp.'s strip mill. On this turn, the company's three-stand tandem 93-in. cold reducing mill turned out 855 tons of 0.093 gage by 66 in. wide cold rolled sheets.

Clearing Machine Buys Indianapolis Company

CHICAGO—The Clearing Machine Corp., Chicago, manufacturer of heavy presses, has acquired the entire common stock of the International Machine Tool Co., Indianapolis, producers of the Libby heavy duty turret lathe. Operations will be continued at Indianapolis where about \$300,000 of unfilled orders are on hand. Present officers of Clearing will assume their respective offices with the new company. R. W. Glasner is president; G. A. Pockels, vice-president; H. P. Isham, treasurer, and G. M. Sundheim, secretary. In addition, E. J. Terry, formerly general factory manager of Caterpillar Tractor Co., Peoria, will become a vice-president of International.

National Sheet Steel Opens Chicago Branch

CHICAGO—The National Sheet Steel Co., Detroit, has leased the east building of the Hansell-Elcock Co. plant at 3153 South California Ave., and has established a Chicago branch with Sol Fox as manager. National, which warehouses primes and seconds, handles sheets exclusively, and intends to purchase locally as much as possible for distribution in the Chicago area. From 20 to 30 persons will be hired here by the company.

PERSONALS

N. L. HITE, since 1927 assistant sales manager of the wire division of the Continental Steel Corp., Kokomo, Ind., has been appointed sales manager of the wire division. He succeeds WILLIAM H. CHILDS, who retired Oct. 1. FRANK L. HORN BROOK has been made assistant sales manager of the wire division. Mr. Hornbrook has been assistant sales manager of the manufacturers' wire division since 1929.

Mr. Hite has been identified with the organization for 33 years, starting his career with the Kokomo Steel & Wire Co. in 1906. Following the merger of this company in 1927 with the Chapman-Price Steel Co., Indianapolis, Ind., and the Superior Sheet Steel Co., Canton, Ohio, to form the Continental Steel Corp., Mr. Hite became assistant sales manager of the wire division.

Mr. Hornbrook began his career in the steel business in 1912, with the Hornbrook-Price Steel Co., which was organized by his father, H. H. Hornbrook. This company later became the Chapman-Price Steel Co.



MARION G. CROSTHWAIT, since 1923 head draftsman of the Fairfield, Ala., plant of the American Steel & Wire Co. and since 1933 head draftsman of the wire plant after its transfer to the Tennessee Coal, Iron & Railroad Co., Birmingham, has been promoted to the position of assistant superintendent of the Fairfield wire works. He studied mechanical engineering at Alabama Polytechnic Institute and became identified with the United States Steel Corp. subsidiary in 1920.



JOSEPH E. OTIS, JR., president of Stewart-Warner Corp., Chicago, for the past six years, has resigned, effective Nov. 1, to assume the presidency of the Dodge Mfg. Corp., Mishawaka, Ind. Mr. Otis was graduated from Yale in 1915 and was an engineer with the Union Carbide & Carbon Co. from 1916 to 1920. From 1920 to 1921 he was associated with the Belden Mfg. Co., Chicago, leaving there in the latter year to organize the Inland Metal Products Corp. From 1923 to 1933 he served as vice-president and general manager of the Alemite Corp., becoming president of Stewart-Warner in 1933. Mr. Otis takes over the place

made vacant last spring by the death of G. C. Miller, president and director of Dodge.



L. H. FROST is new district manager in the Detroit area for Thomson-Gibb Electric Welding Co. The Detroit office of the company has been moved to 307 Boulevard Building, from the General Motors Building. Mr. Frost formerly was chief sales engineer of

the Crucible Steel Co. of America prior to his association with Braeburn.



FRANK A. YOUNG, long connected with Allis-Chalmers Mfg. Co. at Milwaukee, has recently been transferred to that company's Pittsburgh district office. Here his activities will largely be identified with the crushing, cement and other related industries in which he has had considerable service and sales experience. Mr. Young is also familiar with screening problems connected with the coal industry.



N. L. HITE (left) and Frank L. Hornbrook (right) sales manager and assistant sales manager, respectively, of the Continental Steel Corp.

the a.c. division of Electric Controller & Mfg. Co., Cleveland.



L. A. YOUNG was elected president (a post he formerly held) and reelected chairman of the board of L. A. Young Spring & Wire Corp. at a meeting of directors following a special stockholders' meeting early in October. C. M. (BUD) YOUNG, who had been serving as president, was elected vice-president, which office he had held prior to the presidency.



A. J. FAZIO has been appointed assistant general superintendent, Braeburn Alloy Steel Corp., Braeburn, Pa., in charge of all day and night units. He formerly was day superintendent. Mr. Fazio, a graduate of the University of Pittsburgh, was connected with

ROBERT H. FORD, chief engineer, the Rock Island Railroad, retired at the age of 70 on Sept. 30. Mr. Ford joined the road's engineering staff in 1912, becoming assistant chief engineer in 1920 and chief engineer April 1, 1937. Norwich University, Northfield, Vt., from which Mr. Ford graduated, recently conferred upon him the honorary degree of doctor of engineering.



EDWARD H. PLATZ, JR., who since 1920 has been associated with the sales of stainless and corrosion resistant alloy steels, has resigned from the Fayette Iron & Steel Co. to join the alloy steel sales department of Lebanon Steel Foundry, Lebanon, Pa.



CHARLES W. MCGROARTY, chief engineering draftsman at the Bethlehem

Shipbuilding Corp., Quincy, Mass., yards has been made associate naval architect, Maritime Commission, Washington. Two years ago he left the Brooklyn Navy Yard to go to the Quincy plant.

♦ ♦ ♦

W. H. HILLIS has been appointed assistant chief operating officer of the Rock Island Railroad, and F. W. THOMPSON has been named engineer officer. Both men will have their headquarters in Chicago. Mr. Hillis formerly was engineer of maintenance of way, and Thompson was formerly division engineer at Rock Island, Ill.

♦ ♦ ♦

NEILL HUTCHINGS has been appointed comptroller of the Tennessee Coal, Iron & Railroad Co., succeeding the late Creighton M. Konkle. He



MARION G. CROSTHWAIT, assistant superintendent of the Fairfield wire works of Tennessee Coal, Iron & Railroad Co.

formerly was assistant comptroller in charge of accounting. C. R. CULVERHOUSE has been appointed assistant comptroller in charge of accounting. He formerly was assistant to the comptroller.

♦ ♦ ♦

A. E. DIECKMANN has been appointed assistant to works auditor of the Gary plant of Carnegie-Illinois Steel Corp. and H. F. NICHOLS has been named chief timekeeper to succeed Mr. Dieckmann. Mr. Dieckmann went to Gary works in 1922 as a clerk in

the accounting department. He became chief timekeeper in 1936, the post he held until the present time.

♦ ♦ ♦

J. G. GRAHAM has been appointed manager of railway sales, and C. H. REYMER as railway sales engineer, for the Oliver Iron & Steel Corp., Pittsburgh.

♦ ♦ ♦

OTTO V. KRUSE, general sales manager of the Baldwin Locomotive Works, has been made a member of the board of General Steel Castings Corp., Eddystone, Pa.

♦ ♦ ♦

C. E. H. PALMER, of the Newark, N. J., office of the General Electric Co., has been appointed manager of the company's New Haven, Conn., office. He has been identified with the company since 1919.

♦ ♦ ♦

GANO DUNN, president, J. G. White Engineering Corp., and of Cooper Union, New York, has been chosen the 1939 recipient of the Hoover Medal, awarded by engineers to a fellow engineer for distinguished public service. The medal will be formally presented during the annual convention of the American Institute of Electrical Engineers in New York, Jan. 22-26, 1940. Mr. Dunn is the fourth Hoover Medalist. The first was for-

mer President Herbert Hoover; the second was Ambrose Swasey, one of the founders of the Warner & Swasey Co., and founder of the Engineering Foundation; and the third was John Frank Stevens, chief engineer of the Panama Canal.

♦ ♦ ♦

H. E. ANKENY, formerly of the Chicago office of Cutler-Hammer, Inc., Milwaukee, has been appointed to take charge of the Indianapolis territory. He began his career with the company after graduating from Iowa State College. The Indianapolis territory, which operates under the supervision of the Chicago office, is located at 307 North Pennsylvania Avenue.

♦ ♦ ♦

LAWRENCE E. JOSEPH has been elected a director and vice-president of Blaw-Knox Co., Blawnox, Pa. Mr. Joseph recently was appointed executive head of the Blaw-Knox division of the company.

♦ ♦ ♦

LIEUT.-COL. G. M. CARRIE has been elected president of Canadian Refractories, Ltd., Montreal, succeeding G. S. KILBOURN, who has been made chairman of the board. Col. Carrie has been identified with the company and its predecessor since 1922. N. P. PITT, who has been assistant general manager of the company, has been made managing director.



DAVID FINDLAY, whose appointment as president of the L. S. Starrett Co. was announced in these columns last week.



RALPH E. HOUGH, new general manager of the Cambria plant of Bethlehem Steel Co. Details of his career appeared in these columns last week.

... THE NEWS IN BRIEF ...

Automobile production is expected to reach record breaking heights in fourth quarter. . . . Labor tension eases in Michigan.—Page 48.

Sweeping court decision in the Walsh-Healey steel wage determination case criticises Labor Secretary's order as "an attempt arbitrarily to disregard the statutory mandate."—Page 52.

Washington still mystified by the "blackening out" of the War Resources Board.—Page 54.

Canada has embargoed the exportation of scrap.—Page 54.

New Zealand to buy U. S. highway equipment.—Page 54.

The National Relations Board issue more rulings.—Page 55.

TNEC to watch current price developments. . . . Move has approval of the President.—Page 55.

TNEC steel hearings are postponed until Oct. 23.—Page 55.

Monopoly Committee to keep watch on price developments.—Page 56.

Government orders for iron and steel products for week ended Sept. 30 totaled \$306,341.—Page 56.

Navy Department awards additional orders for various items of equipment.—Page 58.

Congressman Hamilton Fish defends the machine at meeting of the American Society of Tool Engineers.—Page 59.

Associated Machine Tool Dealers agree that present situation is one of the most unusual ever encountered.—Page 60.

\$450,000 steam shovel built.—Page 67.

Industrial employment up sharply in Toledo.—Page 61.

New spiral brazed tubing developed by AGA Metal Tube Co.—Page 62.

First Goering stack blown in; accidents cut Soviet's output.—Page 63.

Germany has been largest steel exporter since 1936. . . . England and France next.—Page 64.

American Welding Society, New York section, presents course in metal-lurgy at Polytechnic Institute of Brooklyn.—Page 65.

A. O. Smith Corp.'s employment rises to two-year peak of 4700 as of Oct. 1.—Page 66

National Founders Association to hold its annual meeting at Waldorf-Astoria, New York, Nov. 15 and 16.—Page 66.

Trends toward streamlining of power presses discussed by William Longfield, chief engineer, Cleveland Punch & Shear Works.—Page 65.

Safety Congress to be held in Atlantic City, Oct. 16-20.—Page 65.

Reliance Steel Co. expands in Detroit.—Page 66.

U. S. Government asks for bids on 400,000 lb. of pig tin under Strategic and Critical Materials Act.—Page 67.

General Electric Co.'s orders gain nearly one-third in quarter and in nine months.—Page 67.

Pittsburgh Coke & Iron Co. lets contract for \$300,000 hydrogen sulphite plant.—Page 67.

Japan largest importer of U. S. machine tools in the first half.—Page 68.

Steel output in September was 4,231,310 tons, 12 per cent over August. . . . September rate 72.41 per cent.—Page 68.

American Car & Foundry Co. receives \$6,000,000 order for U. S. Army tanks.—Page 69.

Iron-steel imports in August were only 24,599 tons. Belgium largest steel supplier, Germany next.—Page 70.

Fifty U. S. Army purchasing officers begin week of conferences.—Page 71.

Treasury Department holds to manganese specifications despite pressure from domestic producers.—Page 71.

Jones & Laughlin Steel Corp. strip mill claims record on cold rolled sheet production.—Page 71.

Youngstown Sheet & Tube Co. orders another Fretz-Moon continuous butt weld pipe mill.—Page 71.

National Sheet Steel Co., Detroit, opens Chicago branch.—Page 71.

Government holds to specifications on manganese ore.—Page 71.

Great Britain removes duty on pig iron.—Page 71.

Higher steel prices expected in Canada as war conditions create increased demand.—Page 77.

Management Society plans time study clinic.—Page 77.

Pacific Coast shipyards are to spend \$2,000,000 in rehabilitation.—Page 78.

M. J. Gormley of the Association of American Railroads says the carriers can handle all freight offered.—Page 78.

Steel industry's depreciation costs were \$5 a ton in 1937 and 1938, according to American Iron and Steel Institute.

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MEETINGS

- Oct. 5 to 7—Society of Automotive Engineers, aircraft production meeting, Los Angeles.
- Oct. 6 and 7—Foundry Equipment Manufacturers Association, White Sulphur Springs, W. Va.
- Oct. 16—Society of Automotive Engineers, annual dinner, New York.
- Oct. 17—National Association of Sheet Metal Distributors, Atlantic City, N. J.
- Oct. 17 to 18—American Institute for Steel Construction, New York.
- Oct. 16 to 20—National Safety Congress and Exposition, Atlantic City, N. J.
- Oct. 23 to 27—National Metal Congress, Chicago.
- Oct. 24 to 26—Purchasing Agents Association of Baltimore, products exhibit, Baltimore.
- Nov. 15 and 16—National Founders Association, New York.

PUMP PAYS FOR ITSELF IN 8 MONTHS!

Northwest Paper Company Replaces Old Pump with New Allis-Chalmers Pump . . . Saves \$6.48 Per Day . . . Pays for Itself in Eight Months! Read Why It Pays To Modernize Your Pumping Equipment!

Here's a sensational economy story that hits home to every plant executive who wants to get increased pumpage capacity . . . at less cost!

At the Northwest Paper Company plant in Brainerd, Minnesota, they were using an old belt-driven fan pump to handle one-half of one per cent stock. By actual test they found the old pump required 71 brake horsepower . . . a figure they realized was too high by modern standards.

And because they wanted to make the most savings possible . . . and be "set" for years to come . . . they put in an Allis-Chalmers Centrifugal Pump, connected to a 25 hp Lo-Maintenance Motor.

But the best news was yet to come. For when they made their tests on the new pump, here's what they found . . .

The new Allis-Chalmers Pump actually threw more stock and yet the

test showed it required only 23 brake horsepower! Compared to 71 brake horsepower of the former pump, this means a saving of 48 brake horsepower...an actual dollars and cents saving of \$6.48 per day!

Saves \$1700 Per Year!

Measured in terms of long-time economy, the new pump paid for itself in eight months . . . and went right on piling up savings after that of better than \$1,700 a year...a clear-cut profit!

These are savings figures you can't afford to ignore! If you have old pumping equipment in your plant . . . if you want to find out how to replace that equipment with new pumps that pay their own way . . . you'll want to know about the Allis-Chalmers line of modern centrifugal pumps!



INSTALLATION OF THIS ALLIS-Chalmers Centrifugal Pump with 25 hp Lo-Maintenance Motor, is bringing a savings of \$6.48 a day to the Northwest Paper Company! Read this interesting story of increased production and economy!

Get the facts about these low cost, compact, high efficiency pumps . . . call the district office near you . . . or write direct to Allis-Chalmers. That's how you can cut your pumping costs . . . add to your profits!

A-1113

*90 Years of Engineering
Superiority Work for You When
You Specify Allis-Chalmers!*



CENTRIFUGAL PUMP DIVISION
ALLIS-CHALMERS
MILWAUKEE · WISCONSIN



o o o
FORD V-8 De-
luxe two door
sedan.
o o o

The Week on the Assembly Line

(CONTINUED FROM PAGE 50)

cars was boosted from 9100 to 13,250, while Lincoln-Zephyr climbed from 140 to 360. Chevrolet's start on passenger car production increased its total from 4400 to 9400 and assisted GM in a climb from 17,550 to 24,925. This latter figure also was the identical total for Chrysler assemblies, which the week previous was 21,975. Plymouth remained unchanged at 12,400. The current week will see another substantial increase.

The sharp upward trend in factory employment, which started about 60 days ago, continues unabated. The Board of Commerce industrial employment index was 107.1 at the beginning of October, as compared with 97.5 in mid-September. Approximately 366,000 wage earners are employed in Detroit and vicinity at present. This is the highest level in factory employment here since Nov. 15, 1937.

The tension between industry and

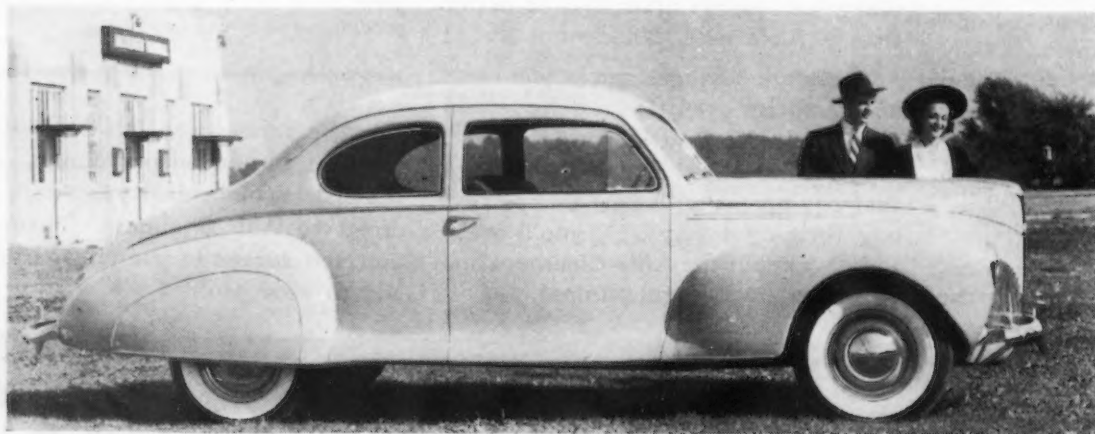
labor was relieved during the last week with settlement of the most important strikes in the automotive area. Terms of agreement were reached in the middle of last week to settle the utility power strike which had threatened the vast industrial area in the Saginaw Valley of Michigan. Part of the bearing strike has been brought to a conclusion through a settlement which affects the 2100 employees of the Bohn Aluminum & Brass Corp. Still unsettled is the phase of the strike which involves Federal Mogul Corp. and Detroit Aluminum & Brass Corp.

The Bohn settlement definitely makes no concession in the direction of a closed or union shop. But one paragraph has given the union an opportunity for face-saving. The paragraph states: "The company for the purpose of this agreement agrees to permit the union to maintain its pres-

ent status." Because the CIO claims that Bohn plants are 100 per cent organized, union officials say that the paragraph therefore guarantees the equivalent of the union shop. Undisputed concessions include a bonus of 5c. per hr. for afternoon and night shifts and vacation bonus equal to 2½ per cent of the total wages earned by each employee in any yearly period.

Meanwhile new difficulties, as yet not serious, arose in other branches of the industry. After a petition by General Motors for an employee election was dismissed by the NLRB, the CIO petitioned for employee elections in 60 plants of the corporation. The CIO had requested last week that GM grant recognition to this union as exclusive bargaining agency and General Motors merely referred the matter to NLRB with the comment that other unions claimed representation and the matter now rested in the hands of NLRB officials.

A three-day strike at the plant of Midland Steel Products Co., manufacturer of automobile frames, ended Oct. 6. The CIO-UAW union accepted



o o o
1940 Lincoln
Zephyr Club
Coupe. A new
body type this
year with accom-
modations for
six passengers.
o o o

• • •
 MERCURY 8 Club
 Convertible. This is
 a new body type
 which has automatic
 top.
 • • •



strike settlement terms offered by the company, representing a compromise in providing day rate and piece work increases, one week vacation annually with pay and seniority rights. Work by the 1100 employees affected resumed on regular schedule.

Buying Is for Longer Period

After virtually 24 months of more or less general hand-to-mouth buying in the Detroit area, conditions this fall have practically eliminated hand-to-mouth buying in favor of two, three and even six months' buying during September. The September survey of the purchasing Agents Association of Detroit shows hand-to-mouth buying practiced by only 1 per cent, compared with the month before when the figures were 13 per cent and 19 per cent respectively. (See chart with "Assembly Line.")

Switch in sentiment was so rapid that the executive secretary of the association declared that, by the time the figures were compiled, it was generally conceded that the 3 per cent hand-to-mouth buying had completely disappeared in favor of long-range purchasing.

At no time in the history of industrial buying, and certainly not in the period covered by the chart on this page has there been such a rapid change in buyer's attitude and such a complete shift from a buyer's market to a seller's market.

Not many of the short-term buyers went into the 60-day group or the 90-day group, because both of these percentages show a decrease for the last 30 days—the first from 25 per cent to 23 per cent and the second from 38 per cent to 36 per cent. The shift was almost entirely from the very lowest bracket into the six-month column. In August only 4 per cent of Detroit in-

dustrial buyers were in the six-month groups, but almost overnight an extra 30 per cent was added, bringing this group to 34 per cent of the total. Two per cent joined the nine-month buyers, increasing the percentage figure there from 1 to 3 per cent.

Higher Steel Prices Expected in Canada

TORONTO — While prices for finished and semi-finished materials are firm with indications of an early upswing, no revision has been announced. Heavy melting scrap steel was the only item to register a price gain, with dealers' marking up offering prices 25c. per ton. New business continues in good volume and inquiries are numerous.

The Canadian War Supply Board is getting ready to place munitions contracts. Companies that will handle the orders have been making every effort to get plants in shape for high speed production. Machine tool builders and machinery makers generally are running on overtime schedules to fill orders, and orders are still pouring in. Car and locomotive builders are awaiting contracts for rolling stock for the Canadian National and Canadian Pacific railroads to cost \$25,000,000. While official announcement has not been made, it is learned in reliable quarters that the orders will involve 4000 box cars; 500 flat cars; 100 automobile cars; 200 refrigerator cars; 10 mail and express cars and some 50 locomotives. It is understood that most of the freight cars will be taken by the Canadian National Railways, and the locomotives may be divided evenly between the two roads.

Announcement was made from Ottawa that large orders for construc-

tion of ships will be placed with Canadian shipyards. Mainly, it is stated, they will be of the trawler or mine-sweeper type, for use in submarine warfare, with some freighters included. Instructions to place orders are awaited by the authorities, although it is stated capacity of the various yards has been surveyed. D. B. Carswell, marine superintendent of the Department of Transportation, has been transferred to the War Supply Board to handle the shipbuilding business. It is understood that some 30 vessels will be contracted for with the first order, to cost about \$1,250,000 per vessel.

The awarding of munitions contracts, which are expected almost daily, are expected to further stimulate pig iron sales, and will have direct effect on increased requirements of basic iron for steel production. So far there has been no shortage of iron and Canadian producers have been able to meet all demands for domestic consumption. Merchant iron is available from Canadian Furnace Co., and Algoma Steel Corp. Pig iron production has been moving forward steadily, and has reached its peak for several years, with seven furnaces blowing.

Management Society Plans Time Study Clinic

CHICAGO—A national time and motion study clinic will be sponsored by the Industrial Management Society at the Medinah Club here Nov. 3 and 4.

The program will include addresses by a number of well known authorities on time and motion study. Plant visits have been arranged with the Carnegie-Illinois Steel Corp., Western Electric Co., Swift & Co. and Edison General Electric Co.

Pacific Shipyards To Spend \$2,000,000

SAN FRANCISCO—Award of 19 Type C-1 diesel cargo ships to Pacific Coast shipyards by the United States Maritime Commission will necessitate rehabilitation and expansion of construction facilities involving an expenditure of at least \$2,000,000.

With the exception of Bethlehem Steel's Union Iron Works plant, which recently completed a destroyer construction contract for the Navy, none of the four yards has undertaken construction of major ships since early postwar days.

Seattle-Tacoma Shipbuilding Corp., which is said to represent much of the same capital that undertook the construction of Boulder Dam, will build five C-1 hulls at the Tacoma yards of the old Todd Drydock & Construction Co. Once afloat, the hulls will be towed to the Todd Seattle Dry Docks, Inc., for outfitting, including installation of machinery and equipment ready for commissioning.

The Todd Tacoma yards have been completely dismantled, even to the buildings, since the launching of the last major ship here 15 years ago. A 105-day yard reconstruction program has already started to provide a three-way yard. Company officials estimate that \$1,000,000 must be spent before ship construction starts.

Western Pipe & Steel Co.'s San Francisco yards, where five C-1's will also be built are in little better shape, the last ships of any type having been built there in 1921. Western Pipe, however, has the advantage of a completely equipped shop at the yard which has been in full operation on the fabrication of steel shapes and plates. Four ways were in operation during the war, but present plans call for the rehabilitation of two.

Consolidated Steel Co., Los Angeles, which has contracted to build four C-1's, has a transportation problem as well as one of rehabilitating the actual building yard. Consolidated will fabricate steel for the ships at its Maywood plant, which is one of the largest in southern California, but will construct the hulls at the Craig shipyard, several miles distant at Long Beach. Craig facilities are limited, and it is understood that they will not now allow the building of a ship longer than 150 ft. The C-1's are 416 ft. overall. Expansion of the yard, not including the solution of the transportation problem, may cost at least \$300,000.

Moore Dry Dock Co., Oakland, Cal., in which six ships were launched in 50 minutes in World War days, had a similar rehabilitation problem when it undertook the construction of two of the larger C-3 vessels in January. The yards had been in use for ship repair and the building of small vessels. More than \$300,000 was spent to bring one way into shape and for accessory equipment, the chief items of which were \$40,000 for a gantry crane, \$30,000 for electrical equipment, and a 3500 cu. ft. compressor, as well as much modern welding equipment. This yard, however, was fortunate in having available 22 cranes of 10 to 25 tons capacity; the other yards will have to buy some similar quantity, and the ones which have been dismantled will have to buy complete new electrical equipment.

Moore may receive award of two more C-3's in which case it is possible that another way may be brought into shape.

Says Railroads Can Handle All Freight

NEWARK, N. J.—There will be ordered or placed in service new this year not less than 60,000 freight cars in the opinion of M. J. Gormley, executive assistant of the Association of American Railroads. His view was expressed at a meeting here last Thursday of the Atlantic States Shippers' Advisory Board.

Reflecting a position consistently held by the association, in the face of a contrary opinion in some circles, Mr. Gormley said there need be no fear that the railroads will be able to handle any anticipated increase in traffic. He declared that a study of the capacity of the railroads indicates that because of "the very great increase in efficiency in railroad operation since 1918, and particularly since 1923," the performance of 1918 does not give a fair basis to estimate what can be done now.

Referring to an estimate of some months ago that with the cars and engines in the condition that they were at that time that a minimum of 25 per cent more than the existing business could be handled, Mr. Gormley said:

"Already the railroads are handling approximately 36 per cent more than the traffic at that time, or 11 per cent over the estimate. This merely indicates how conservative the estimate was. At the same time, it was esti-

mated that if all the locomotives and cars awaiting repairs were put in condition for service, the railroads could handle 50 per cent more than the then existing business. Based upon what they have already done, there is no doubt that this estimate also is far too low."

... OBITUARY ...

VOSBURGH HORTON, for many years identified with the scrap iron and steel business, died at his home in New York on Sept. 26, aged 65 years. He was a son-in-law of the late John Leonard and was associated with him in the old Manhattan Rolling Mill Co. For 15 years prior to his retirement three years ago, he was with Henry Shapiro, Wilkes-Barre, Pa.

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HENRY J. MOLLING, a partner in the Expert Die & Tool Co., Detroit, was buried Sept. 30. Mr. Molling died of a heart attack. He was a member of the Resistance Welders Manufacturers' Association.

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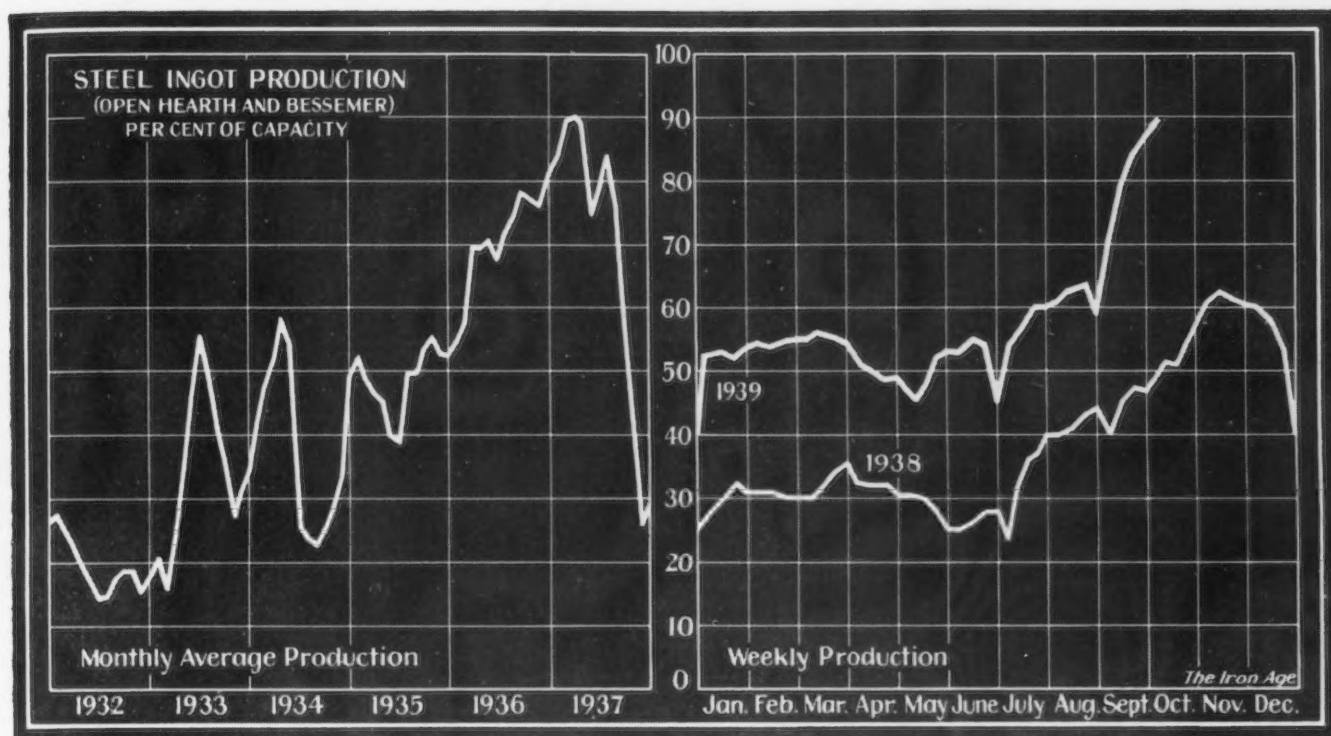
WILLIAM T. FILMER, supervisor of safety for Youngstown Sheet & Tube Co., died in South Side unit of Youngstown Hospital Oct. 1, aged 63 years. Mr. Filmer suffered a stroke at his home three weeks ago. He was one of the Valley's leaders in safety and fire prevention and headed the development of the program at Youngstown Sheet & Tube Co. where he had been employed since 1912.

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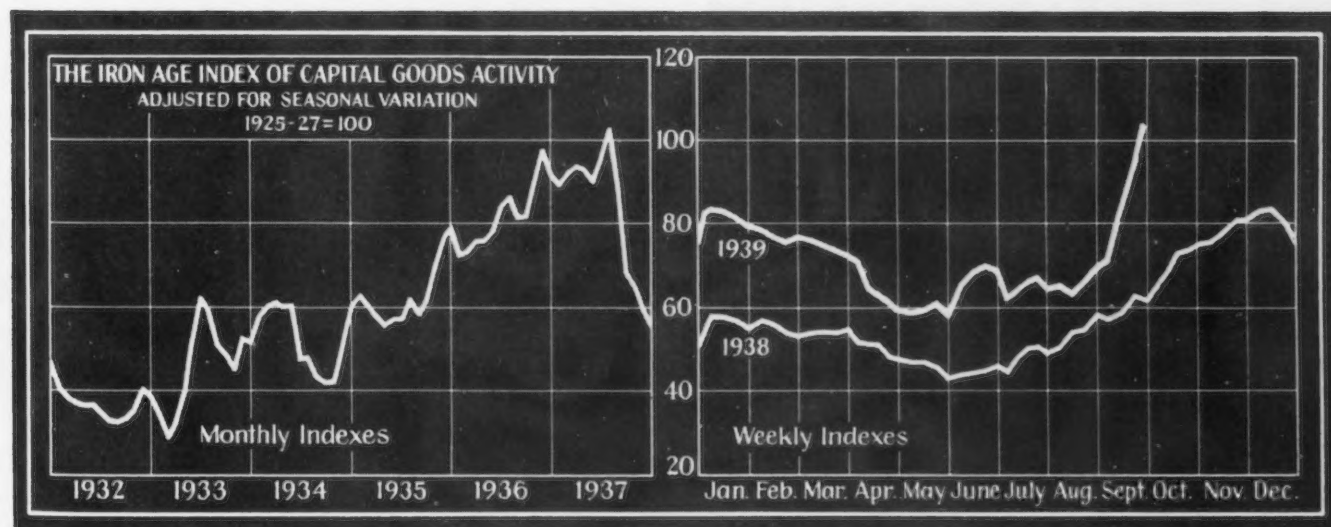
RASMUS RASMUSSEN, 70, operator of the Rasmussen Machine Works, Marinette, Wis., died of peritonitis recently. He was a native of Denmark and had resided in Marinette for 50 years, 46 of which he operated the machine shop.

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ALBERT H. BECKMAN, 62, comptroller of the A. O. Smith Corp., Milwaukee, was killed in an automobile accident while enroute to Lake Poygan for a week end of fishing. With him were Charles Engle, president of the Engle Tool & Forge Co., and Henry Muenchow, divisional superintendent of the A. O. Smith Corp., both of whom escaped with minor injuries. Mr. Beckman had been comptroller since 1921, having started with the company many years ago as an office boy. He was a graduate of the University of Wisconsin, and had been a member of the Elks Lodge.



District Ingot Production, Per Cent of Capacity	Pittsburgh	Chicago	Valleys	Philadelphia	Cleveland	Buffalo	Wheeling	Detroit	Southern	S. Ohio River	Western	St. Louis	Eastern	Aggregate
CURRENT WEEK..	87.0	87.5	93.0	77.0	90.0	96.0	90.0	100.0	90.0	86.5	65.0	77.5	70.0	90.0
PREVIOUS WEEK..	84.0	86.0	93.0	72.0	88.0	78.5	90.0	97.0	86.0	83.5	60.0	75.0	95.0	87.5



WITH operations in the heavy goods industries continuing to expand, in most cases counter to seasonal trends, THE IRON AGE index of activity in this field rose 5.2 points to 101.1 in the past week, bringing the index to the highest position since Aug. 28, 1937, and only 4.9 points below the 1937 peak. While the automobile and steel factors are still the most spectacular performers, a large part of the past week's gain was due to an unusually sharp rise in the Pittsburgh factor, a reflection of a higher pace in both rail and water shipments and blast furnace operations there. With the exception of the construction component, all factors of the index are above their relative 1929 positions. It is likely that the future rate of climb of the index will be more moderate than that

of the past month, particularly since it is unlikely that steel output and auto assemblies will continue to improve as sharply as they have in the past 30 days. There is, however, considerable room for further gains in both the heavy construction and lumber carloadings indexes.

	Week Ended Oct. 7	Week Ended Sept. 30	Comparable Week	
			1937	1929
Steel ingot production ¹	124.0	120.6	65.9	117.5
Automobile production ²	142.1	129.7	68.5	106.5
Construction contracts ³	70.8	69.5	73.9	109.7
Forest products carloadings ⁴	66.6	63.8	58.5	113.2
Production and shipments, Pittsburgh District ⁵	102.3	96.2	58.8	118.4
Combined index	101.1	95.9	65.1	113.1

Sources: 1. THE IRON AGE; 2. Ward's Automotive Reports; 3. Engineering News-Record; 4. Association of American Railroads; 5. University of Pittsburgh.

... SUMMARY OF THE WEEK ...

... *Wire nails advanced \$3 and reinforcing bars \$5 a ton.* . . .

... *Trade is awaiting announcement of prices on other products.* . . .

... *Steel operations at 90 per cent; scrap eases off in leading centers.*

WITHOUT waiting for formal announcement of future steel prices by the leading producer, some of the independent mills have advanced wire nails \$3 a ton and reinforcing bars, both new billet steel and rail steel, \$5 a ton. Next to sheets and strip these products have been subject to the greatest price weakness in the past two years.

The advance on nails places virtually all merchant wire products on a \$3 a ton higher basis. The new prices apply for such new business as can be taken for delivery over the remainder of the year.

Makers of new billet steel reinforcing bars are disinclined to take business even at the higher prices because of the great need of their entire supply of semi-finished steel in other departments.

A general price announcement is expected this week or next. Opinion in the trade is that advances will be moderate, possibly not more than \$2 or \$3 a ton, even though the higher figure is less than the increased melting cost due to scrap alone. While some steel people believe that increases of \$5 to \$10 a ton would more nearly represent the higher costs that may be faced in the first quarter, the vague possibility of a truce in the European war has brought a more moderate view. It is recognized that price advances which would be warranted if present conditions continue would create a top-heavy price structure if the war should suddenly end. Advances of \$2 or \$3 for the first quarter were a definite possibility had there been no war.

The persistent peace talk has brought about careful consideration of the steel industry's position in the event of an armistice. There would undoubtedly be cancellations or suspensions of some tonnage now on the books, but no drastic decline in operations is envisaged. Had there been no war, operations this fall probably would have risen to at least 70 or 75 per cent. Moreover, there has been no strictly war business, though some of the current business has been inspired by fear of shortages or higher prices caused by the war. Even if war should end, there would be

no marked change for the time being in the large railroad program, nor would the automobile industry, whose sales and prospects are highly encouraging, be seriously affected. The Federal Government's preparedness program, which has been a business stimulant in many directions, probably would not be curtailed.

MUCH of the current steel business is being taken on the basis of price in effect at time of shipment. An increasing number of steel users are asking for reservations on first quarter schedules. Steel companies are concentrating on production and delivery problems in an effort to satisfy customers, many of whom are still working on low inventories. Railroads are urging quick deliveries so that they can get started on rehabilitation programs. Additional car orders have been placed and fresh inquiries have come into the market. Fully 200,000 tons of rails will be placed shortly by roads centering at Chicago. Ten additional ships awarded by the Maritime Commission will take 34,000 tons of steel. Automobile companies are taking heavy shipments, though the shutdown of the Chrysler plants may relieve the pressure from that source until the labor difficulties are settled. Pig iron shipments to foundries are increasing in volume. The only branch of the steel business to show a declining tendency is in fabricated structural steel work.

Meanwhile, steel operations this week have advanced to 90 per cent of the industry's capacity, according to THE IRON AGE estimate. Some plants and even some entire districts are operating at 100 per cent or close to that figure. The Detroit rate is 100 per cent, Buffalo is at 96 per cent and Youngstown is at 93 per cent. Tin plate mills are estimated to be operating at 93 per cent and some cold reduction units are running at rates above their theoretical capacity to meet the heaviest tin plate demand the trade has ever experienced at this time of the year.

The sensitive scrap trade, affected possibly by the talk of peace or by the high prices to which old material has risen, has experienced a slight flattening out, which may be only temporary, but quotations for No. 1 heavy melting steel are lower at Pittsburgh, Chicago, Cleveland, Youngstown and Detroit, all being off 50c., excepting Pittsburgh, where the decline in THE IRON AGE average is 75c. However, a Buffalo mill has bought 40,000 tons of steel scrap at prices about 50c. a ton over those quoted last week. THE IRON AGE scrap composite price is down 42c. to \$22.08 a ton.

THE IRON AGE capital goods index has advanced 5.2 points to 101.1, the highest figure since Aug. 28, 1937, and only 4.9 points below the 1937 peak. In fact, excepting the construction factor, all components are above their positions at this time in 1929.

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous
Advances Over Past Week in Heavy Type, Declines in Italics

Rails and Semi-finished Steel

Per Gross Ton:	Oct. 10, 1939	Oct. 3, 1939	Sept. 12, 1939	Oct. 11, *1938
Rails, heavy, at mill	\$40.00	\$40.00	\$40.00	\$40.00
Light rails: Pittsburgh, Chicago, Birmingham	40.00	40.00	40.00	40.00
Rerolling billets: Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point	34.00	34.00	34.00	34.00
Sheet bars: Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point	34.00	34.00	34.00	34.00
Slabs: Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point	34.00	34.00	34.00	34.00
Forging billets: Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham	40.00	40.00	40.00	40.00
Wire rods: Nos. 4 and 5, Pittsburgh, Chicago, Cleveland	43.00	43.00	43.00	43.00
Skelp, grvd. steel: Pittsburgh, Chicago, Youngstown, Coatesville, Sparrows Point, cents per lb.	1.90	1.90	1.90	1.90

Finished Steel

Cents Per Lb.:				
Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham	2.15	2.15	2.15	2.25
Plates: Pittsburgh, Chicago, Gary, Birmingham, Sparrows Point, Cleveland, Youngstown, Coatesville, Claymont	2.10	2.10	2.10	2.10
Structural shapes: Pittsburgh, Chicago, Gary, Buffalo, Bethlehem, Birmingham	2.10	2.10	2.10	2.10
Cold finished bars: Pittsburgh, Buffalo, Cleveland, Chicago, Gary	2.65	2.65	2.65	2.70
Alloy bars: Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton	2.70	2.70	2.70	2.80
Hot rolled strip: Pittsburgh, Chicago, Gary, Cleveland, Middletown, Youngstown, Birmingham	2.00	2.00	2.00	1.95
Cold rolled strip: Pittsburgh, Cleveland, Youngstown	2.80	2.80	2.80	2.75
Sheets, galv., No. 24: Pittsburgh, Gary, Sparrows Point, Buffalo, Middletown, Youngstown, Birmingham	3.50	3.50	3.50	3.50
Hot rolled sheets: Pittsburgh, Gary, Birmingham, Buffalo, Sparrows Point, Cleveland, Youngstown, Middletown	2.00	2.00	2.00	1.95
Cold rolled sheets: Pittsburgh, Gary, Buffalo, Youngstown, Cleveland, Middletown	3.05	3.05	3.05	3.00

On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

Cents Per Lb.:	Oct. 10, 1939	Oct. 3, 1939	Sept. 12, 1939	Oct. 11, *1938
Wire nails: Pittsburgh, Chicago, Cleveland, Birmingham	2.55	2.40	2.40	2.45
Plain wire: Pittsburgh, Chicago, Cleveland, Birmingham	2.60	2.60	2.60	2.60
Barbed wire, galv.: Pittsburgh, Cleveland, Birmingham	3.40	3.25	3.25	3.20
Tin plate, 100 lb. base box: Pittsburgh and Gary	\$5.00	\$5.00	\$5.00	†\$5.35

*Pittsburgh prices only.
†Applies to 80-rod spools only.
‡Subject to post-season adjustment.

Pig Iron

Per Gross Ton:				
No. 2 fdy., Philadelphia	\$24.84	\$24.84	\$22.84	\$22.84
No. 2, Valley furnace	23.00	23.00	21.00	21.00
No. 2, Southern Cin'ti	23.06	23.06	21.06	21.06
No. 2, Birmingham	19.38	19.38	17.38	17.38
No. 2, foundry, Chicago†	23.00	23.00	21.00	21.00
Basic, del'd eastern Pa.	24.34	24.34	22.34	22.34
Basic, Valley furnace	22.50	22.50	20.50	20.50
Malleable, Chicago†	23.00	23.00	21.00	21.00
Malleable, Valley	23.00	23.00	21.00	21.00
L. S. charcoal, Chicago	30.34	30.34	28.34	28.34
Ferromanganese, seab'd carlots	100.00	100.00	100.00	92.50

†The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

Scrap

Per Gross Ton:				
Heavy melting steel, P'gh...	\$23.50	*\$24.25	\$18.25	\$15.25
Heavy melting steel, Phila...	23.00	23.00	17.25	14.75
Heavy melting steel, Ch'go...	19.75	20.25	14.75	12.75
Carwheels, Chicago	18.00	18.50	13.75	13.25
Carwheels, Philadelphia	22.25	22.25	17.25	16.75
No. 1 cast, Pittsburgh	22.75	*23.75	18.25	15.50
No. 1 cast, Philadelphia	24.75	24.75	17.75	16.75
No. 1 cast, Ch'go (net ton)	17.25	17.75	13.75	12.25

*Corrected.

Coke, Connellsville

Per Net Ton at Oven:				
Furnace coke, prompt	\$4.75	\$4.75	\$3.75	\$3.75
Foundry coke, prompt	5.50	5.50	4.75	4.75

Non-Ferrous Metals

Cents per Lb. to Large Buyers:				
Copper, Electrolytic, Conn...	12.50	12.00	12.00	10.75
Copper, Lake, New York	12.50	12.125	12.00	10.875
Tin (Straits), New York	55.00	**60.00	75.00	44.875
Zinc, East St. Louis	6.50	6.50	6.25	4.95
Zinc, New York	6.89	6.89	6.24	5.34
Lead, St. Louis	5.35	5.35	5.35	4.95
Lead, New York	5.50	5.50	5.50	5.10
Antimony (Asiatic), N. Y.	14.00	14.00	14.00	14.00

**Nominal.

The Iron Age Composite Prices

Finished Steel

Oct. 10, 1939
One week ago
One month ago
One year ago

2.236c. a Lb.	
2.236	
2.236	
2.286	

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products represent 85 per cent of the United States output.

	High	Low
1939.....	2.286c., Jan. 3;	2.236c., May 16
1938.....	2.512c., May 17;	2.211c., Oct. 18
1937.....	2.512c., Mar. 9;	2.249c., Jan. 4
1936.....	2.249c., Dec. 28;	2.016c., Mar. 10
1935.....	2.062c., Oct. 1;	2.056c., Jan. 8
1934.....	2.118c., Apr. 24;	1.945c., Jan. 2
1933.....	1.953c., Oct. 3;	1.792c., May 2
1932.....	1.915c., Sept. 6;	1.870c., Mar. 15
1931.....	1.981c., Jan. 13;	1.883c., Dec. 29
1930.....	2.192c., Jan. 7;	1.962c., Dec. 9
1929.....	2.223c., Apr. 2;	2.192c., Oct. 29
1928.....	2.192c., Dec. 11;	2.142c., July 10

Pig Iron

\$22.61 a Gross Ton	
22.61	
20.61	
20.61	

Based on average for basic iron at Valley furnace and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.

	High	Low
\$22.61, Sept. 19;	\$20.61, Sept. 12	
23.25, June 21;	19.61, July 6	
23.25, Mar. 9;	20.25, Feb. 16	
19.73, Nov. 24;	18.73, Aug. 11	
18.84, Nov. 5;	17.83, May 14	
17.90, May 1;	16.90, Jan. 27	
16.90, Dec. 5;	13.56, Jan. 3	
14.81, Jan. 5;	13.56, Dec. 6	
15.90, Jan. 6;	14.79, Dec. 15	
18.21, Jan. 7;	15.90, Dec. 16	
18.71, May 14;	18.21, Dec. 17	
18.59, Nov. 27;	17.04, July 24	

Steel Scrap

\$22.08 a Gross Ton	
22.50	
16.75	
14.25	

Based on No. 1 heavy melting steel quotations at Pittsburgh Philadelphia and Chicago.

	High	Low
\$22.50, Oct. 3;	\$14.08, May 16	
15.00, Nov. 22;	11.00, June 7	
21.92, Mar. 30;	12.92, Nov. 10	
17.75, Dec. 21;	12.67, June 9	
13.42, Dec. 10;	10.32, Apr. 29	
13.00, Mar. 13;	9.50, Sept. 25	
12.25, Aug. 8;	6.75, Jan. 3	
8.50, Jan. 12;	6.43, July 5	
11.33, Jan. 6;	8.50, Dec. 29	
15.00, Feb. 18;	11.25, Dec. 9	
17.58, Jan. 29;	14.08, Dec. 3	
16.50, Dec. 31;	13.08, July 9	

... THIS WEEK'S MARKET NEWS ...

NEW BUSINESS

... Volume is lighter but sales for first quarter are gaining

STEEL producers at PITTSBURGH are still booking fresh orders subject to price at time of shipment, but only in cases where consumers insistently demand it. The total volume of such business is insignificant compared with aggregate bookings placed in the past four weeks for fourth quarter shipment. The amount of sheet business being taken on the basis of price at time of shipment is of fair volume, and there are actually some isolated cases where consumers did not order enough material a month ago for their requirements. In some instances, consumers are exerting pressure for deliveries. A protracted shutdown at Chrysler plants would obviously release the pressure on those mills supplying this company temporarily but would of course present delivery problems when automobile production is resumed.

At CLEVELAND and YOUNGSTOWN, where mills are scheduled well into next year, the relationship of orders to production and shipments is exactly the reverse of their positions one month ago. Orders are falling by reason of the booked-up condition of mills, while production and shipments are rising; however, the big production gains are over and from now on only small weekly increases can be expected as the last few points are the hardest to achieve. Shipments are climbing fast toward their peak.

Certain producers report output has gone above the level for best profit, owing to the necessity of placing high cost units in service. This profit situation varies among different companies, but costs of all producers have risen several dollars per ton of finished steel since Aug. 15.

While there is not a great deal of tonnage on mill books which can be attributed directly to the war, nevertheless the neutrality issue and the comparatively quiet European situation during the past week have brought a slower tempo in regard to distant schedules, and some hesitancy in expansion projects and price policies.

In CHICAGO the decline in the rate at which orders are being received is almost as sharp as the rise in bookings following Labor Day. One sales office reports bookings for last week totaling exactly half those of the pre-

vious week, while another mill points out that new business today is almost "extinct."

A large CHICAGO producer is taking no business for first quarter on any basis because of the advance knowledge that allocation will again be necessary and the impossibility of proper scheduling at this time. This same mill is accepting no further shipping releases against tonnage booked, all orders being rolled at mill's convenience. Most of the automobile shipping schedules already are in hand, it was pointed out.

Considerable activity is being shown by makers of agricultural machinery, especially small farm tractors, automobile parts makers, steel warehouses and railroad car builders.

Several in CHICAGO have wondered what would happen to the tremendous tonnages now on the books if peace in Europe were to come. The consensus there is that practically none of the steel ordered by the railroads would be touched nor would the great volume of sheets and strip taken at last May's low prices. It is felt, however, that some, probably a considerable portion of the bars, plates, shapes and other steel products booked at the full market price, would be canceled.

Three major western roads, the Santa Fe, Burlington and Union Pacific have not at this writing actually ordered their 1940 rail requirements, though the Santa Fe and Union Pacific have announced their intention of buying a total of 191,000 tons of rails and fastenings. The Burlington's requirements to date are not known. Since rail producers have set Oct. 15 as the deadline for receipt of rail specifications to be rolled and shipped by March 31, 1940, this business is expected within the week.

Farm income prospects are exceptionally good as the Middle Western States have abundant crops and the price response to increased demand since Labor Day has been much more rapid than in 1914.

CHICAGO district demand for alloy steels is chiefly from makers of motor car parts, tractors, oil well supplies and railroad equipment. Electric furnace alloys are very tight because of limited capacity.

Consumers of rolled products in the St. Louis area are placing orders for steel to be shipped during the first quarter of next year at the prices prevailing at time of shipment. Buying for the fourth quarter has subsided.

PIG IRON

... Shortage of metal may bring more stacks into blast

SHORTAGE of iron still is facing integrated steel plants at PITTSBURGH, CLEVELAND and other points, indicating that additional blast furnaces are likely to be blown in to satisfy consumers whose melt has been increasing. Merchant producers are fairly well filled up for the balance of the year and little or no new business is being accepted at current quotations. Higher pig iron prices apparently are not far away.

In the PITTSBURGH area the Pittsburgh Crucible Steel Co. has blown in its second blast furnace at Midland, Pa., and Pittsburgh Steel Co. has blown in its second and remaining stack at Monessen, Pa.

At CLEVELAND and YOUNGSTOWN shipments of all grades continue exceptionally heavy, with foundry operators reporting a pronounced shortage of molders as well as metal. There is very little new buying at PHILADELPHIA, but shipments made before the last price rise are steadily expanding as melters endeavor to build up inventories against possibility of a shortage. The rise in prices and shortage of foundry grades of scrap have caused many foundrymen to turn to No. 3 iron, which carries a 50c. differential below the No. 2 grade, to replace some of the scrap.

There has been a lull in new buying in the BOSTON and NEW YORK districts in the last two weeks, the chief effort being concentrated on shipment of pig iron against contracts booked in September. The trade feels that most of this iron is going into consumption. Export sales at BOSTON the past week are estimated at 10,000 tons.

The CINCINNATI pig iron market has become quiet with virtually all interests covered. Some small spot ordering has been reported from sources that are seeking to replace scrap with pig iron because of the price situation in the scrap market. Shipments are definitely better than last month. Foundry operations are up slightly. In CHICAGO some iron is being sold at \$23, but most buyers covered well in advance at the old price. Foundries serving the farm equipment and automobile industries are well occupied, and probably will continue so the remainder of the year.

STEEL OPERATIONS

*... Rate for industry at 90% ...
Some plants at 100%*

THE IRON AGE estimates steel ingot production for this week at 90 per cent compared with 87½ per cent last week. The PITTSBURGH rate this week is 87 per cent, up three points over last week. The WHEELING-WEIRTON rate is unchanged at 90 per cent. The CHICAGO rate is 87½ per cent, highest since 1929. Ingot output in the CLEVELAND-LORAIN district has risen two points to 90 per cent, with all plants at virtual capacity except the Upson works open hearths which have been idle for years. The rate for YOUNGSTOWN and vicinity is unchanged at 93 per cent. At BUFFALO Bethlehem's Lackawanna plant is now running 100 per cent, bringing the district rate up to 96 per cent. The EASTERN PENNSYLVANIA rate has risen to 77 per cent. The BIRMINGHAM rate is 90 per cent, DETROIT 100 per cent.

PRICES

*... Nails advanced \$3 a ton ...
Reinforcing bars up \$5*

THOUGH at the time of going to press no announcement of prices had been made by subsidiaries of the United States Steel Corp., the expectation in the trade is that some news will be forthcoming this week or next week at the latest.

No official word is obtainable as to how much steel prices will be increased. Some opinion is that advances will range from \$6 to \$10 a ton, while other opinion is that they will not be more than \$2 or \$3 at this time.

Without waiting for an announcement by U. S. Steel, some of the independent producers have raised prices of nails and reinforcing bars. Nails have gone up \$3 a ton, and this quotation is quite general on such business as can be taken for delivery before the end of the year. Makers of billet steel and rail steel reinforcing bars have raised prices \$5 a ton to 2.15c. a lb., PITTSBURGH. Makers of billet steel bars are not much interested in orders, as they will require all of their raw steel for other products.

Makers of cold rolled alloy bars may soon make changes in extras to conform to changes made in the extras on hot rolled bars.

STRUCTURAL SHAPES

*... Awards and new projects in
lighter volume*

STRUCTURAL specifications at PITTSBURGH are substantially unchanged from a week ago. There has been some protective buying because of the possibility of a steel shortage and extended deliveries.

The better activity over the past few months in the PHILADELPHIA area has resulted in a gradual improvement in fabrication prices, but net realization of mills supplying plain structural material has not shown a corresponding gain.

Structural steel lettings are again lower at 12,600 tons as against 15,400 tons last week, with the bulk of awards in small tonnages. The largest lettings are 1410 tons for an apartment building in New York at 69th Street and Fifth Avenue; 1350 tons for the Shore Parkway in Brooklyn; 1250 tons for the Milwaukee Electric Railway, Power & Light Co., Milwaukee, and 1025 tons for hospital pavilions for the University of Pennsylvania, Philadelphia.

Structural steel projects at 14,400 tons are slightly lower than a week ago. The largest new jobs reported are on the Pacific Coast and include 3200 tons for Navy buildings at Sitka and Kodiak Island, Alaska; 1150 tons for a grade separation at Los Angeles, and 1000 tons for a grandstand at Albany, Cal.

The Magnolia Petroleum Co. has placed 2020 tons of plates for welded steel tanks at Corpus Christi and San Antonio, Tex.

TUBULAR GOODS

*... New business brisk ... Some
mills may soon be sold out*

AT the start of this week new business was still coming in briskly at CLEVELAND, but producers were scrutinizing orders closely and it appeared evident mills which were not already out of the market would be sold out at any moment. Stocking of oil country goods, merchant pipe and other items has been very heavy.

Tubular goods sales at PITTSBURGH reflect about the same tempo as a week ago. Mills are busy getting out some export business and the disposition on the part of domestic oil companies to be more liberal with specifications continues.

SEMI-FINISHED STEEL

*... Integrated mills, short of steel,
restricting sales*

WITH most large integrated steel mills short of raw steel for their own consumption, it is obvious that little or no semi-finished tonnage will be available for sale over the next few months at least. Many companies still must determine where they stand with relation to shipments and production on their own business; after this situation is clarified, it may be possible that space can be found for a small amount of additional semi-finished steel business. Emphasis now is on shipments which are highly dependent on operating conditions. Practically every blooming mill in the country capable of running is now in operation. Meanwhile, the trade continues to look for announcements of steel prices which are expected to be higher. The amount of new business being taken continues to be exceptionally small, and, of course, is accepted only at the price to be in effect in the time of shipment.

At CLEVELAND forgers are finding it difficult to get all the raw material they want. It is practically impossible to obtain prompt shipments.

REINFORCING BARS

*... Billet and rail steel material
advanced \$5 a ton to 2.15c.*

CONCRETE bar producers are even less interested in taking new business than they were a week ago. This condition has caused an advance in price of both new billet and rail steel reinforcing bars of \$5 a ton. It has been learned that some companies are even declining to book business at the equivalent of 2.15c. a lb. f.o.b. PITTSBURGH.

To contractors or jobbers new billet bars in lots of 20 tons or over, 30 ft. or longer, for shipment at one time to one destination are 1.90c. CLEVELAND reports that while bar mills are heavily loaded, some reinforcing bar tonnage can be worked in to the schedules, due to the lesser amount of conditioning necessary.

Demands upon raw steel have been so heavy from other steel product departments that the present tight situation with respect to obtaining concrete bars will probably continue for a few months at least. Owing to the absence of any price announcements on concrete bars, it is taken for granted that

this product is on a spot price basis.

Among the larger awards are 800 tons for a store building in Cincinnati, taken by the Pollak Steel Co., and 750 tons for a hospital at Rochester, Minn., taken by the Bethlehem Steel Co.

A substantial tonnage will be required for a graving dock at the Puget Sound Navy Yard, estimated to cost \$1,500,000, for which bids will be opened Oct. 18. The Vladeck housing project in NEW YORK calls for 4000 tons.

RAILROAD BUYING

... Santa Fe to buy 91,000 tons of rails and 2800 cars, rebuild 2500

WHILE the rush of railroad buying of equipment and rails has subsided, there is still a substantial amount of business in immediate prospect.

Freight car purchases in September amounted to 24,231 cars, or double the purchases made in the preceding eight months of the year, according to *Railway Age*. In addition, 52 locomotives and three passenger-car trains were ordered by domestic railroads in September. Purchases in the previous month totaled 315 freight cars, five locomotives and no passenger-train cars. For the first nine months of the current year, purchases total 33,623 freight cars, 213 locomotives and 177 passenger-train cars, as compared with 9406 freight cars, 118 passenger-train cars and 101 locomotives in the corresponding period of 1938.

Rails and Accessories

Oct. 15 has been established as the deadline for the receipt of rail tonnage to be shipped by March 31, 1940. The Burlington, Santa Fe and Union Pacific are the major Western roads which have not yet definitely placed their rail requirements. These three roads alone are expected to buy nearly 200,000 tons of rails. The Great Northern, the Rock Island are expected to place rail orders some time this week.

The Santa Fe will buy 91,000 tons of 131 and 112-lb. rails with necessary fastenings.

The Wabash Railway has been authorized by the Federal Court at St. Louis to buy 10,000 tons of 112-lb. rails to be installed in 1940, together with the necessary accessories. The materials and the work of relaying will cost \$1,337,600.

Wheeling & Lake Erie Railroad recently purchased 3000 tons of rails from Carnegie-Illinois Steel Corp.

San Francisco Municipal Railway asks bids Oct. 16 on 1275 tons of 110-lb. girder rail, 100 tons of 129-lb. guard rail and 200 pairs of joint plates.

Bureau of Reclamation, Denver, has awarded contract for relaying rail for sidings, etc., at the Shasta Dam track re-location to the Southern Pacific Co. at \$78,296.

Central of Georgia has ordered 4250 tons of rails from Tennessee Coal, Iron & Railroad Co.

Equipment Orders and Inquiries

The Santa Fe has purchased 1800 box cars from Pullman Standard Car Mfg. Co., 400 ballast cars from American Car & Foundry Co., and 750 miscellaneous cars from General American Transportation Corp.

The Union Pacific, Southern Pacific and North Western railroads will participate in the purchase of two deluxe streamlined trains for service between Chicago and the Pacific Coast. Each of the trains will be drawn by 6000 hp. diesel-electric locomotives.

The Wabash is converting 1000 automobile cars into steel sheathed box cars.

Santa Fe will purchase 1800 box cars, 200 ballast cars, 250 gondolas, 450 refrigerator cars and 100 flat cars. In addition 2500 box, auto and refrigerator cars will be rebuilt in its own shops.

The Chicago, North Shore & Milwaukee is considering the purchase of two streamlined four-coach trains to cost \$299,000 each.

In addition to 1000 box cars previously reported, the Rock Island will buy 20 diesel-electric switch engines, and will rebuild 400 obsolete box cars.

Nevada Consolidated Copper Co. has purchased 30 dump cars from Austin-Western Road Machinery Co., and Detroit, Toledo & Ironton has ordered 25 hopper cars from American Car & Foundry Co.

Utah Copper Co. is taking bids on 100 ore cars, and U. S. War Department is seeking prices on 125 tank cars for transporting gasoline.

The Louisville & Nashville has ordered 600 cars from the American Car & Foundry Co. in addition to the 600 reported previously to Pullman Standard.

The Union Tank Car Co. has ordered 100 tank cars from American Car & Foundry Co. The Northern Pacific is inquiring for 1800 box cars.

St. Louis Southwestern Railway is making plans to build 100 ballast cars, 56 flat cars and 50 automobile cars in its shops at Pine Bluff, Ark.

The Union Pacific has ordered 36,000 tons of rails from Colorado Fuel & Iron Corp. Orders for an additional 36,000 tons and for 10,000 tons are expected to be placed this week with Carnegie-Illinois Steel Corp. and Inland Steel Co., respectively. The road will also buy 18,000 tons of track accessories.

SHIPBUILDING

... 10 additional boats awarded will take 34,000 tons of steel

APPROXIMATELY 28,800 tons of steel will be required for the eight cargo vessels awarded last Saturday to the Sun Shipbuilding & Dry Dock Co., Chester, Pa., by the United States Maritime Commission. The vessels are of the C-2 design with 13,900 tons displacement each. The award brings the number of ships ordered under the commission's construction program to 137, of which 40 are of the C-2 design.

The Maritime Commission also awarded a \$3,980,000 contract to the Pennsylvania Shipyard, Inc., Beaumont, Tex., for two C-1 type steel cargo ships. They will require a total of 5300 tons of steel.

The Los Angeles Shipbuilding & Drydock Co., San Pedro, Cal., has applied to the Los Angeles Board of Harbor Commissioners for permit to construct a reinforced concrete bridge crane structure and ship launching ways at an estimated cost of \$225,000.

MERCHANT BARS

... Orders are fewer owing to deferred delivery situation

FRESH orders for hot rolled bars at PITTSBURGH are relatively small in number and tonnage as such business cannot be shipped before the end of the year and hence takes an unknown price. Producers, however, are being flooded with formal specifications covering previous commitments and on the basis of raw steel available, bar mills continue at capacity production. Substantial shipments are going forward to automotive centers but tonnages being taken by the miscellaneous trade are equally as heavy.

Despite greatly stepped up bar mill operations at CLEVELAND and YOUNGSTOWN, shipments have not yet hit their full stride and the pressure from buyers is mounting. Empty railroad cars and trucks are not always promptly received, which provides another com-

plication for shipping departments. On total tonnage CLEVELAND and YOUNGSTOWN mills are loaded to Jan. 1, but when the vast pile of orders is finally sorted and classified there may be some capacity remaining in certain sizes.

With the exception of certain sizes, mills in CHICAGO are unable to take further bar business this year. Finishing capacity is not being entirely utilized, but mill allocation of raw steel is holding down production. Forgers in this district are estimated to be operating at about 60 per cent of capacity. Small farm tractor makers are extremely busy, one plant stepping up operations 30 per cent in recent weeks, and another attaining the high production of 150 units daily.

SHEETS AND STRIP

... Consumers pressing for shipments to replenish low stocks

A FAIR amount of new sheet and strip business, accepted on the basis of price at time of shipment, has been booked at PITTSBURGH within the past week. Total tonnage, however, is insignificant compared with recent bookings. There is evidence that a few consumers had let their stocks get to a dangerously low position and, as a result, are now clamoring for delivery. Heaviest movement of sheets is going to the automobile companies but miscellaneous requirements are taking their share. Producers are attempting to hold new business at a minimum until prices are announced. Higher quotations are expected.

Production and shipments are gaining at CLEVELAND and YOUNGSTOWN. Occasionally, however, it is necessary to reduce speed or skip a turn until slabs or sheet bars accumulate. Many of the older finishing mills are operating now and additional idle units are

likely to be brought into service. Considerable over-time is being paid by some producers who wish to avoid inexperienced third shifts.

CHICAGO mills are rolling and shipping flat rolled at the fastest possible rate, and at least one mill is refusing to accept buyers' shipping schedules for orders now booked, everything being at mills' convenience. Considerable foreign demand for sheets and strip has been seen there, but little has been taken. The extent to which consumers had allowed inventories to run down is a great factor in today's confusion. Automobile companies are constantly requesting faster shipments from CHICAGO mills, indicating high production. Retail car sales are understood to be in excess of the industry's estimate and a continuation of this increase is anticipated. Railroad car builders are specifying heavily against their sheet protections as various Midwest plants get under way on new rolling stock.

Sheet mills in the southern Ohio area are practically out of the market on all types of steel, with the exception of some small margin still remaining in stainless and electrical sheets.

PLATES

... Railroad tonnage adding to backlogs of the mills

ORDERS from the railroads and car builders for the large railroad construction and repair program are filling up the plate mill schedules of some of the larger producers.

From CHICAGO it is reported that the bulk of the plate tonnage on mill books is from the railroads, car builders, structural fabricators and miscellaneous consumers. CLEVELAND reports that large tonnages for inventory purposes continue to be offered but

cannot be accepted other than on the basis of price at time of shipment.

The smaller independent mills in EASTERN PENNSYLVANIA are accepting business on the basis of their new price of 2.35c. a lb., mill, promising delivery in some cases within three to four weeks. While the tonnage being booked at 2.35c. is not large in comparison with the business done in past weeks at 2.10c., there has been some substantial carlot purchases at the higher level. The Pennsylvania Railroad is reported to have covered its requirements for its car building and repair program at 2.10c.

An inquiry from the Hague calls for 1400 tons of ship plate, practically all of one size and gage, but few mills are in a position to bid on a tonnage of this size, even at the attractive price of 2.55c., currently quoted on ship plate.

WAREHOUSE BUSINESS

... Prices being advanced ... Sales in larger volume

STEEL warehouse business at PITTSBURGH in September was substantially ahead of that of August and the quicker tempo has continued into October. Inability to obtain steel supplies promptly from major steel companies has caused some producers to seek warehouse support on some items. Galvanized sheets have been advanced 25c. a 100 lb. and are now quoted at 4.75c. a lb., delivered Pittsburgh district, for 24 gage in lots of 150 to 1499 lb. Several upward revisions have been made in the quantity brackets. The base quantity of cold finished bars has been changed to 1500 lb. and over instead of 1000 lb. and over as heretofore. Certain deductions for quantities over the base quantities have also been reduced.

Weekly Bookings of Construction Steel

	Week Ended				Year to Date	
	Oct. 10, 1939	Oct. 3, 1939	Sept. 12, 1939	Oct. 11, 1938	1939	1938
Fabricated structural steel awards	12,600	15,400	19,100	22,200	767,775	682,475
Fabricated plate awards	2,020	4,325	3,145	0	158,105	100,210
Steel sheet piling awards	545	0	18,600	0	67,625	34,685
Reinforcing bar awards	9,050	10,200	4,300	3,850	378,345	263,610
Total Letting of Construction Steel ..	24,215	29,925	45,145	26,050	1,371,850	1,080,980

At BUFFALO some prices were advanced this week. Galvanized sheets are up 20c. to 4.70c. a lb. Reinforcing bar billets are up 10c. to 2.15c. a lb.

A general upward revision has been made at BOSTON in extras for special finishes of shafting, and quantity differentials of 12 ft. random bars. Wire nails have been raised \$3 a ton.

While there has been a slight improvement in warehouse business in ST. LOUIS, the demand has been disappointing and not up to the volume in other cities. Inquiries have been numerous, and it is believed these will be turned into orders shortly.

WIRE PRODUCTS

... Nails up \$3 a ton following advances on other wire items

WIRE producers generally have followed the recent advances made by some companies on merchant wire products so that a summary of recent events indicates a \$3 spot advance on nails, gages 9 and 11 field fence, staples and barbed wire, lawn fence and welded wire, reinforcing road and building fabric. Field fence 12½ gage and lighter continues unchanged at column 67 and no action seems to have been taken as yet on annealed and galvanized fence wire or on bale ties.

New merchant wire business at PITTSBURGH continues relatively light since some producers are turning down business, even at the new higher price level. Wherever possible, fresh orders are being accepted, especially in those cases where there happens to be some room on the rolling mill schedules which would enable producers to get the material out as quickly as possible. Present prices appear to be on a strictly spot basis subject to delivery within 30 days or at mill convenience. It is expected that price information on rods and manufacturers' wire will be forthcoming soon.

CHICAGO wire sellers are still quite busy with demand heavy from both the industrial and merchant products divisions. Jobbers throughout the rural districts report regular and rapid depletion of stocks.

At CLEVELAND all producers have recognized the \$3 increase in the merchant lines, but scarcely any room exists on mill schedules for fourth quarter delivery.

TIN PLATE

... Operations at 93% as demand taxes the mills

TIN plate operations this week are up two points to 93 per cent of capacity. This high rate is being brought about by taxing current cold reduction equipment beyond its theoretical capacity and also by increasing beyond the normal amount the number of turns worked in hot mills. The amount of tin plate which must be shipped from the mills by Dec. 31 is so large that present operating rates will probably continue in effect and may even go higher in the next few months.

The current heavy demand of course is being dictated by the fact that can companies had the lowest inventories in several years and also an attempt is being made to get in under the wire before anticipated higher prices go into effect. There is a disposition by many packers to get as much food as possible into cans while there has also been an exceptionally heavy packing of certain fish products. Last month was the biggest September some of the can companies had ever experienced.

CHICAGO tin mills are running at capacity, with specifications being received in great volume. CHICAGO producers have accepted but little of a large amount of foreign business offered.

... GREAT BRITAIN ...

... Higher prices for home trade expected... American steel purchases doubtful at this time.

LONDON, Oct. 10 (By Cable)—The steel industry in Great Britain is still awaiting the announcement of the maximum official home trade prices for delivery after October. Increases are expected as prices have remained unchanged since before the outbreak of the war.

Foundry pig iron demand is steadily improving. Sheet mills are especially busy, though all steel works are intensely active. Midlands works are much busier since war broke out. Many Scottish works are operating at record rate.

It is an official view here that high prices of American steel and shipping difficulties preclude at present Franco-British purchases in the United States.

The Cartel is still dormant but may be revived in a limited fashion later.

At present the export trade of all members is badly disorganized and restricted by the war which is diverting supplies to their own home consumers.

The Continental steel market is improving slowly, but conditions are still very far from normal. Scandinavian and Holland demands, however, are widening and shipments to Britain are improving.

Luxemburg steel masters are nervous about the possible extension of hostilities to their country.

Discussions between the Indian War Supply Board and the Indian steel producers as to the best way to utilize Indian steel output to meet war requirements while paying due regard to civil needs resulted in a general agreement.

The tin plate market is strong with makers unable to fully satisfy the eager and large demand. Big export sales have been effected up to 28s base 1C f.o.b. works port. Buyers include colonies, Europe and South America.

Steel Depreciation Costs \$5 a Ton

CHARGES for depreciation and depletion of steel plant equipment and properties averaged nearly \$5 a ton of finished steel produced in 1937 and 1938—an increase of nearly 30 per cent over depreciation and depletion charges per ton in 1928-1929, the American Iron and Steel Institute has computed.

More rapid obsolescence of steel plant equipment in recent years as a result of technological progress, and the installation of more expensive equipment, have increased the rate at which plants and equipment depreciate. These have been major factors in raising depreciation and depletion charges per ton from \$3.85 in the 1928-1929 period to an average of \$4.95 in 1937 and 1938. Another factor was the 27 per cent decline in average annual output between those two periods.

An average of \$142,700,000 was charged annually for depreciation and depletion in 1937-1938, a reduction of less than 6 per cent from average annual depreciation charges in 1928 and 1929. In the 1928-1929 period, total charges for depreciation and depletion represented 3.9 per cent of the total property value, while in 1937 and 1938, depreciation and depletion charges were equivalent to 4.3 per cent of the value of the industry's plants and properties.

Sound Profits System, Not Profiteering, Is America's Need, Says E. T. Weir

"SECOND to avoiding war, the biggest American problem is restoration of a sound profits system to America," said Ernest T. Weir, chairman of the National Steel Corp. and president of the American Iron and Steel Institute, in a broadcast over the NBC Blue Network Friday Evening, Oct. 6. "When we restore a sound profits system, we will also restore sound employment and sound wages," said Mr. Weir.

"During recent years," he said, "there has been a tendency to believe there is something wrong with profits—a tendency to consider profits and profiteering as words of closely similar meaning. Nothing can be farther from the truth. The American system is the profits system. Without the one we cannot and do not have the other."

"The American system is essentially a system of private enterprise. Our form of government was especially devised to give the individual citizens the greatest possible freedom, security, and prosperity in his private life. It gave him the right to employ either or both his labor and his savings in earning a livelihood. The return for labor is wages. Wages must also be paid for the use of savings or capital. And these wages paid for savings can be paid from only one source—profits. Unless there are profits from which to pay wages for savings a man will not put his savings to work any more than he will put himself to work unless there is prospect of wages for his labor. It takes an average of \$6500 of somebody's savings to make and keep a job for one worker in industry."

"The better the wages the more willingly men work. The better the profits, the more willingly men put savings to work. And unless savings are put to work plants lie idle, commerce stagnates, prosperity gives way to depression."

Warns Against Profiteering

"That is why the necessity to earn profits is always on a business man's mind. He not only wants to, he must earn steady, reasonable profits. But he does not want to earn the quick, apparently easy, but unreasonable, and in the end, false profits of profiteering. A business man builds his enterprise as a permanent institution. He knows that profiteering breaks confidence, makes enemies and eventually destroys a

business enterprise. The fellow who does not know this is no business man. He is a shoddy gambler."

"Politicians have tried every trick to restore American industry to a prosperity basis—except one. They have not tried to enable industry to earn a reasonable profit. In fact, the effect of most political schemes has been to make it impossible for industry to earn any kind of profit. The politicians failed miserably in restoring prosperity because their plans were unbalanced. They tried to enable the individual to earn wages for his labor while they prevented him from earning wages with his savings. Under the American system the individual must be able to do both. If he can't, the American system does not function. The attempt to rob one side of this social equation has unnecessarily continued depression originated by the last war and with it continued unemployment, poverty, and suffering of the American people."

"Many people think that there is a clash between profits and wages—that when profits are high something is taken away from wages and that for wages to be high something must be taken away from profits. This is a total mistake. * * * In good times, profits, employment and wages go up together. In depressions wages and employment go down while profits disappear."

"No thinking American wants to abolish profits. That means to abolish the system of private enterprise. And the only alternative to that system is some form of the twisted social, economic and political now exhibited in Europe. * * *

"But our country is basically sound; its economic structure is sound. All we need is to free it so it will work again. And we will know it is working again when American industry again makes a reasonable profit and the American worker has full employment at a fair wage. And I don't mean 'employment at a fair wage' either war profits or war stimulated production, employment and wages."

Urges Reasonable Profits

"You may ask, what is a reasonable profit? Well, we all regard 1928 and 1929 as boom years—high profit years. In these years the profit on American industry was slightly more

than seven per cent on invested capital. That is not a huge return for the savings of the American people. Yet it was enough to attract the full use of those savings and the American people enjoyed unparalleled prosperity. Profits must have been reasonable. Compare the employment and wages of those pre-depression years with conditions in this country during the past 10 years when profits were 2.7 per cent and when taxes were rising, relief rolls expanding and millions of Americans unemployed."

Reasonable profits and prosperity go together. But let me put in a word of caution. Profits must not only be reasonable; they must be soundly earned."

"Today all of us must resist the temptation to gain unsound profits and also unsound employment and unsound wages. I refer, of course, to the war situation. In the past, perhaps some business men thought permanent profits could be made from war. Today they do not delude themselves. With one voice, American industry is demanding, 'Keep America out of war.'"

"War produces nothing healthy. Its apparent profits and high wages are illusions which dissolve in the terrible aftermath of war. In the last war we inflated our industrial structure to supply the world, we put our whole economic system out of joint. We have been paying for it to the present day in high taxes, lost employment, lost wages, lost profits. Let us not make the same mistake again. Let us have peace."

Sees Some Higher Prices

"But with war in the world we cannot avoid all of its effects, nor will we escape all of its suffering. At present we are in a spiral of rising activity. This will bring some increase in prices. You may hear charges of profiteering. If you do, do not be swayed by emotion—look for facts. Remember many prices are now too low. Remember that for six years the Administration has tried to raise some commodity prices artificially. Remember also that higher prices do not necessarily mean higher profits. In fact, the same forces that raise prices may lower profits. Control over costs, and therefore prices, has largely been taken out of the hands of business men. Government controls now affect costs of wages, raw material and taxes. Government by bureaus has increased costs and added new costs. It is inevitable that this type of synthetic economics must increase costs and prices. Yet it adds nothing to profits."

REINFORCING STEEL

... Awards of 9050 tons; 9850 tons in new projects.

ATLANTIC STATES

AWARDS

- 1000 Tons, Franklin Falls, N. H., dam, to Truscon Steel Co., Boston; Coleman Brothers Corp., Boston, contractor.
- 806 Tons, Roxbury, Mass., housing project, to Joseph Ryerson & Son, Inc., Cambridge, Mass.
- 550 Tons, Wilkes-Barre, Pa., Kinston culverts, U. S. Engineers, to Truscon Steel Co., Youngstown, through Ralph Meyers, Salem, Ind., contractor.
- 165 Tons, Milton, Mass., State road and bridge, to Northern Steel Co., Boston; M. Mateo & Sons, Roslindale, Mass., contractors.
- 120 Tons, West Stockbridge, Mass., State road, to Truscon Steel Co., Boston; M. Pandolf, Needham, Mass., contractor.
- 100 Tons, State of New Hampshire, three State bridges, to Concrete Steel Co., Boston.

SOUTH AND CENTRAL

- 800 Tons, Cincinnati, Kroger Co. building, to Pollak Steel Co. through Morton C. Tuttle Co., Boston, contractor.
- 750 Tons, Rochester, Minn., St. Mary's hospital, to Bethlehem Steel Co., Bethlehem, Pa., through McGough Bros., contractors.
- 500 Tons, Covington, Ky., Latonia Terrace housing, to Truscon Steel Co., through Whittenberg Construction Co., contractor.
- 486 Tons, State of Arkansas, highway requirements, to Jones & Laughlin Steel Corp., Pittsburgh.
- 300 Tons, Grand Rapids, Mich., pumping station, to Bethlehem Steel Co., Bethlehem, Pa.
- 300 Tons, Cincinnati, Mount Washington reservoir, to Pollak Steel Co. through Ferro Concrete Construction Co., contractor.
- 175 Tons, Detroit, malt silos to Joslyn Mfg. Co., Fort Wayne, Ind.
- 150 Tons, Cincinnati, Sixth Street viaduct, to Pollak Steel Co., through J. R. Crew, contractor.
- 130 Tons, Normal, Ill., bridge, route 5, to Laclede Steel Co., St. Louis, through Robert Gibbons, contractor.
- 130 Tons, Milwaukee, box sewer, to Youngstown Sheet & Tube Co., through Worden-Allen Co., Milwaukee.
- 107 Tons, Bay City, Mich., telephone building, to Truscon Steel Co., Youngstown, Ohio.
- 100 Tons, Columbus, Ohio, Kroger Co. building, to Pollak Steel Co., through C. M. Barr & Co., contractors.

WESTERN STATES

- 1130 Tons, Redding, Cal., Central Valley Project (Invitation 33341-A), to Colorado Fuel & Iron Corp., Denver.
- 537 Tons, Panama Canal (Schedule 3589), to Youngstown Sheet & Tube Co., Youngstown, Ohio.
- 247 Tons, Cascade Locks, Ore., Bridge of the Gods, to Bethlehem Steel Co., San Francisco, through Tavares Construction Co., contractor.
- 230 Tons, Santa Paula, Cal., bridge, to Blue Diamond Corp., Los Angeles.
- 223 Tons, Odair, Wash., Grand Coulee Dam and power plant (Invitation A-38486-A), to Bethlehem Steel Co., San Francisco.

PENDING REINFORCING BAR PROJECTS

ATLANTIC STATES

- 4000 Tons, New York, superstructure, Vladeck Housing.
- 500 Tons, Green Haven, N. Y., cell blocks Nos. 9 and 10.
- 160 Tons, Philadelphia, Frankford Arsenal buildings.
- 150 Tons, East Hartford, Conn., manufacturing unit, Pratt & Whitney Division, United Aircraft Corp.

SOUTH AND CENTRAL

- 500 Tons, Cincinnati, Laurel Homes housing.
- 400 Tons, Lexington, Ky., housing project.
- 400 Tons, Russell, Kan., bridge.
- 400 Tons, Chicago, subway stations, Grand Avenue and State Street sections; bids Oct. 26.
- 400 Tons, Peoria, Ill., housing project; bids taken Oct. 9.
- 350 Tons, Omaha, Neb., sewage plant.
- 325 Tons, Belleville, Ill., sewage treatment plant; Hoeffken Bros., Belleville, low bidders on general contract.
- 270 Tons, Champaign, Ill., tunnel for University of Illinois; Lyman Construction Co., Chicago, low bidder on general contract.
- 125 Tons, Chicago, Illinois Bell Telephone Co. branch exchange, Marquette Road.
- 100 Tons, Starved Rock, Ill., seawall.
- Unstated tonnage, Chicago, General Electric warehouse; bids Oct. 17.

WESTERN STATES

- 500 Tons, Denver, Lowry Field barracks; Mead & Mount, Denver, general contractors.
- 332 Tons, Hickam Field, T. H., warehouses; bids Oct. 12; tonnage includes 75 tons of mesh.
- 228 Tons, San Francisco, Alcatraz Island, housing; Louis C. Dunn, low bidder on general contract.
- 188 Tons, Merced County, Cal., highway paving; bids taken Oct. 11.
- 175 Tons, San Francisco, Alcatraz Island, dock; bids Oct. 14.
- 117 Tons, Orleans, Cal., Klamath River bridge; bids Oct. 25.
- 100 Tons, San Francisco, Outer Mission Junior High School gymnasium; Leo Epp, San Francisco, low bidder on general contract.
- 100 Tons, Climax, Colo., Climax Molybdenum Co. building.

CAST IRON PIPE

Lakewood, Ohio, has plans for new waterworks plant and system, and has revised estimates of cost for development totaling about \$1,650,000. Of this amount approximately \$220,000 will be expended for main intake pipe line; \$312,000 for cast iron distribution mains; steel standpipes, \$110,000; low service pumping station, including pumping machinery, piping, discharge lines, etc., \$53,000; filter station, piping, etc., \$275,000. J. N. Chester Engineers, Inc., Century Building, Pittsburgh, is consulting engineer.

Palestine, Tex., plans pipe lines for water system and other waterworks installation. Fund of \$85,000 has been secured through Federal aid for this and sewer system.

Esopus, N. Y., asks bids until Oct. 19 for 4850 ft. of 2 to 8-in. pipe for extensions in water system in Port Ewen district; also for valves, hydrants, etc. Sanborn & Bogert, 30 Church Street, New York, are consulting engineers.

St. Cloud, Minn., will receive bids until Oct. 17 for 6 and 4-in. water pipe, class 150 or equal, in carload lots, for extensions in system.

Jackson County Public Water District No. 5, care of I. Frank Rope, Fidelity Building, Kansas City, Mo., attorney and representative, will take bids soon for pipe lines for water system in district in southeastern part of Jackson County; also for 60,000-gal. elevated steel tank and tower, pumping station and other waterworks installation. Bond issue of \$103,000 has been voted for project. C. M. Kerr, water department, City Hall, Kansas City, is consulting engineer; W. F. Norris, Land Bank Building, Kansas City, is supervisor of construction and will be in charge of equipment purchases.

Pioneer, Ohio, plans pipe lines for water system and other waterworks installation. Cost about \$30,000. Bond issue will be voted at general election Nov. 7. Champe, Finkbeiner & Associates, Nicholas Building, Toledo, Ohio, are consulting engineers.

Wichita, Kan., has awarded contract to American Cast Iron Pipe Co., Birmingham, for 25 miles of 48-in. pipe for a soft water pipe line at a cost of \$1,067,590. Contract for valves has been placed with S. Morgan Smith Co., York, Pa., at a cost of \$48,154.

Denison, Tex., plans pipe line extensions and replacements in water system; also enlargement of filter plant and increased storage facilities. Fund of about \$370,000 is being arranged for this and sewer system. A. M. Brenneke is city engineer.

Greeley, Colo., plans about two miles of 20-in. pipe for mountain supply line, replacing present wood pipe; also other extensions and improvements in water system. Cost about \$99,000, of which \$31,133 will be secured through Federal aid.

Board of Lake County Supervisors, Waukegan, Ill., Russ Alford, County clerk, will take bids soon for pipe line from connection with city system to County hospital. Cost about \$28,000. James Anderson Co., 290 East Deerpath Avenue, Lake Forest, Ill., is consulting engineer.

Lynwood, Cal., plans about 17,500 ft. to replace present wooden pipe lines in two dis-

tricts of municipality. Cost about \$41,800. Financing is being arranged through Federal aid. A. J. Bateman is city engineer.

Goldendale, Wash., has taken bids on 204 tons of 6, 8 and 10-in. pipe.

Coulee City, Wash., has announced that Collucio, Seattle, is low bidder on pipe line construction requiring 203 tons of 4, 6, 8 and 10-in. pipe.

... PIPE LINES ...

Sinclair-Prairie Pipe Line Co., Wichita Falls, Tex., an interest of Sinclair-Prairie Oil Co., Tulsa, Okla., plans 4-in. welded steel pipe line from Rogers oil field district, Montague County, Tex., to connection with present pipe line near Nocona, Tex., for crude oil transmission; also steel pipe line gathering system to connect several pools in oil field area in northern part of Archer County, Tex., for crude oil transmission, with pumping station and other operating facilities. Entire project will cost close to \$125,000.

Texas Public Service Co., Austin, Tex., plans pipe line in parts of Shoalwood and Lawnmont Avenues, in district north of city, for gas transmission distribution in that area.

Magnolia Pipe Line Co., Esperson Building, Houston, Tex., a subsidiary of Magnolia Petroleum Co., Magnolia Building, Dallas, Tex., plans 6-in. steel pipe line gathering system to connect five casinghead gas wells in Kilgore, Tex., field; also two booster pumping stations at Kilgore and Francis, Tex., respectively, and another similar station on new welded steel pipe line between Vanderbilt and Saly, Austin County, Tex., recently approved. A steel tank storage plant will be built near West Ranch-Vanderbilt oil field district, Jackson County, Tex. Cost over \$200,000.

Oklahoma Natural Gas Co., 401 North Harvey Street, Oklahoma City, Okla., plans extensions and replacements in pressure pipe line system for natural gas distribution at Sapulpa, Okla. Cost close to \$60,000.

Gas Corp. of Michigan, Mount Pleasant, Mich., has approved immediate construction of new 3-in. welded steel pipe line from Amble, Montcalm County, Mich., gas field district to Greenville, Mich., about 20 miles, for natural gas transmission.

Center, Tex., has plans for pressure pipe line system for natural gas distribution, totaling about 15,200 ft. with control station, meters, etc. Bond issue of \$50,000 was voted recently for project.

Anglo-Canadian Oil Co., Ltd., Edmonton, Alta., plans steel pipe lines for crude oil transmission in connection with development of additional oil properties in Turner Valley oil field area, including pipe line gathering systems, pumping stations and other operating facilities. Fund of about \$1,000,000 is being arranged for project during next 12 months.

TRADE NOTES

The Taylor Winfield Corp., manufacturer of electric butt, spot and seam welders, Warren, Ohio, has opened a sales office at 623 State Mutual Building, 340 Main Street, Worcester, Mass. V. Wayne Green is in charge.

The American Brake Shoe & Foundry Co. has established an export department with D. H. Young as director of exports. Mr. Young is vice-president of the American Manganeese Steel division of the company.

Prestole Devices, Inc., subsidiary of Detroit, Harvester Co., has been moved from Detroit to the Dura plant at Toledo, Ohio. The Dura company also is a division of Detroit Harvester Co.

Ransome Concrete Machinery Co., Dunellen, N. J., manufacturer of the Ransome line of welding tables and positioners, has appointed Fuchs Machinery & Supply Co., 1102 Farnam Street, Omaha, Neb., as sales representative in part of Nebraska and Iowa.

U. S. Steel to Expand Its Cold Reduced Tin Plate Facilities

PITTSBURGH—U. S. Steel Corp. is contemplating expansion of its cold reduced tin plate facilities at Carnegie-Illinois Steel Corp.'s Irvin works, Gary works, and at the Tennessee Coal, Iron & Railroad Co.'s plant. If the present plan goes through, a new five-stand tandem, 42-in. cold reduction mill and two, two-stand 42-in., temper pass mills will be installed at Carnegie's Irvin works. Additions at the Gary works would involve two-stand temper pass mills only, with the possibility of some expansion in other finishing mill auxiliary equipment. As far as the Tennessee company is concerned, expansion there would be along the lines of what is contemplated for the Gary works.

This program was hinted at last Dec. 15 at the opening of the Irvin works by Benjamin F. Fairless, president of the U. S. Steel Corp., who forecast expansion of the Irvin works by additional units of production at some future date.

The corporation's tin plate plants have been consistently increasing their capacity for the production of

cold reduced tin plate, the demand for which has grown phenomenally in the past few years. Hence the program under contemplation is a logical expectation in view of the company's policy in maintaining its relative position in the tin plate industry.

The National Steel Corp.'s Weirton Steel Co. subsidiary at Weirton, W. Va., is now in the process of modifying its four-stand, 38-in. tandem cold mill, as well as one of its two-stand temper pass mills. Although this equipment existed heretofore, certain changes are being made to increase the strip delivery speeds as well as increase ultimate production. It is understood this company is also modifying its present hot mill, which action will obviously result in a greater production of strip by the continuous process.

Wheeling Steel Corp., at its Steubenville plant, is modifying its four-stand 55-in. tandem cold reducing mill and its 64-in. skin pass mill, the object being to completely modernize this equipment and increase ultimate production.

charged that a speed-up was being staged to get more than a fair day's work out of workers. As a result of union orders to start the slow-down more than 100 employees were allegedly dismissed Friday for slowing down production. Most of them were shop stewards.

Shortage of stampings made in the Dodge plant was expected to cause a shut down of other Chrysler units on Tuesday.

CIO Leader Found Guilty of Criminal Syndicalism In Iowa

CHICAGO—A CIO leader, and alleged communist sympathizer, William Sentner, was found guilty of criminal syndicalism last week in connection with a sitdown strike in the Maytag Washing Machine Co. plant at Newton, Iowa, last year. Criminal syndicalism is the term applied to penal statutes designed to curb subversive activities by radicals. Conviction carries a maximum penalty of 10 years' imprisonment and a \$5,000 fine. The Maytag strike, involving 1500 workers, was called by the CIO United

Electrical & Machine Workers' union when a pay cut was suggested.

A William Sentner, of Missouri, is a member of the non-resident board of Commonwealth College, Mena, Ark., institution which trains organizers for CIO and other unions.

September Shipments Gain 181,208 Tons For U. S. Steel

FINISHED steel shipments of United States Steel Corp. subsidiaries rose 181,208 tons in September to a total of 985,030 tons against 803,822 tons in August. Shipments in September, 1938, totaled 527,666 tons.

During the first nine months of 1939 the steel corporation units shipped 6,858,427 tons, compared with 4,588,224 tons in the corresponding period of 1938, a gain of 2,270,203 tons.

Cleveland Punch & Shear Plans \$250,000 Addition

CLEVELAND—Construction of a 34,000 sq. ft. addition for the Cleveland Punch & Shear Works here will be begun immediately. W. D. Sayle, president, stated that the project would represent an investment of approximately \$250,000, including equipment. The addition will accommodate machinery required in the manufacture of large presses.

\$250,000 War Plane Factory To Be Built At Nashville

DETROIT—Aviation Mfg. Corp. of which Stinson Aircraft Co., Wayne, Mich., is a division, has announced plans for a \$250,000 factory at Nashville, Tenn., ostensibly to take care of the military half of Stinson production. The company recently received an order for \$1,800,000 worth of army observation planes. Separation of production is understood to be planned to lessen possible espionage and sabotage.

Construction Costs Reported Up 5c. Per Sq. Ft.

CLEVELAND—Industrial construction costs advanced approximately 5c. per sq. ft. to an average of \$1.45 in the third quarter of 1939, according to The Austin Co., here. These costs compare with a 25-yr. average of \$1.50 per sq. ft. and a record high of \$2.67 in the post-war boom of the early '20s. They do not include heating, lighting or plumbing costs.

Chrysler Closes Plants After CIO Stages Slow-Down

DETROIT—A complete shutdown of all Dodge plants affecting more than 16,000 men was ordered by Chrysler Corp. Monday because the UAW-CIO had intensified a slow-down strike which originated last week.

The UAW is seeking a new contract with the Chrysler Corp. to replace the one which expired Sept. 30. The union recently was winner in an employee poll conducted by NLRB to determine the bargaining agent.

As background for its negotiations on the new contract the UAW began to curtail production last week by refusing to work on a percentage of the new cars passing along the assembly line. At the time the company, which recently began production of 1940 models, was attempting to raise the production rate from the initial starting pace up to the normal which is expected after assembly lines are functioning smoothly. The union

IRON AND STEEL SCRAP

OCT. 10—The biggest mill sale in Buffalo's history, involving 40,000 tons of No. 1 steel, was completed on Monday at prices that advanced steel making grades 50c. there. Another large sale, involving 10,000 tons of No. 2, was made to a St. Louis mill at 50c. above the previous purchase price of this consumer, but in line with the market. Elsewhere prices are on the soft side and trading is still in small amounts or is being withheld. At Pittsburgh, for example, small sales to consumers have resulted in a drop of 75c. in the average price of No. 1 steel, and a sale has been made to a Chicago mill at 50c. under last week's market. Prices in eastern Pennsylvania have leveled off. As a result, THE IRON AGE composite price has declined 42c. from the high of the past 16 years of \$22.50 to the current average of \$22.08.

Prices at both Youngstown and Cleveland have declined 50c. sympathetically with the softness at Pittsburgh. Dealer buying prices at Detroit are also lower. Railroad lists the first week in October brought extremely high prices, however, and higher prices on railroad specialties are reflected throughout the lists.

Export buying prices are stronger as vessels become more plentiful.

Pittsburgh

Apprehension seems to be the keynote of the market this week. Sentiment is definitely softer than a week ago but this condition may be only temporary. Scrap is still relatively scarce even though supplies appear to be coming out a little more freely. A small sale of No. 1 heavy melting has been made in the past week at \$23, a slightly larger sale into consumption has been made at \$23.50, and some brokers have offered moderate sized tonnages at \$24 a ton. Brokers are able to pick up some No. 1 at \$23, where a week ago it was practically impossible to obtain any supplies. Purely reflecting current conditions which may or may not be significant with regard to coming events, No. 1 heavy melting steel this week is quoted in a dollar range of \$23 to \$24 a ton, down 75c. a ton from last week's average. Meanwhile, scrap consumers in this district, for the time being at least, are out of the market and one point is restricting shipments. It is to be remembered however that steel operations in this district are still on the upward trend and are now approaching 1937 highs.

Chicago

Following last week's \$20.50 sale of No. 1 steel, another district mill paid \$20 for a tonnage; hence heavy melting steel this week is being quoted at \$19.50 to \$20.

Brokers are able to buy from dealers at \$19.50 and in some cases \$19.25. The leading buyer is expected to enter the market again before the end of this week but for the present transactions of any type are infrequent. Some brokers on Tuesday were making no quotations. The trade here feels the current weakness is only temporary, everything depending on events abroad. Mill operations are the highest in 10 years.

Philadelphia

Although it appears that the market here is at present in somewhat of a leveling off period, recent feelers put out by consumers indicate that it is unlikely that any important tonnage of No. 1 steel could be acquired at less than \$23. This is confirmed to a degree by the recent sale of 4000 tons of bundles by Budd in the neighborhood of \$22.50, f.o.b. plant. On the other hand, brokers are apparently able to obtain fairly substantial quantities of No. 1 steel at \$21 to \$21.50. Steel making grades have been quite noticeably in better supply over the past two weeks, but cast grades are still comparatively scarce.

Cleveland

The market is softer, temporarily at least, due to the absence of mill buying and other uncertainty. Brokers can buy cheaper. The railroad lists last week brought very high prices, the principal local steel bringing around \$24 to on-line Ohio destinations. Open-hearth operations are around 90 per cent, but the large scale at Buffalo, and lower prices at Chicago and Pittsburgh are reflected in sentiment here. Heavy melting and blast furnace grades are quoted down 50c. per ton this week.

Youngstown

The market shows a slight dip here this week, represented by a 50c. per ton decline in published quotations. There has been little mill buying, and dealer prices are off slightly. The whole market tone is unsettled.

Buffalo

Totaling 40,000 tons, the largest district sale on record at Buffalo was completed Monday when the biggest consumer in the area made a purchase of No. 1 heavy melting steel at a price within the range of \$21.50 to \$22.

An additional sale of 6000 tons of No. 2 heavy melting steel was made to another district consumer at a price within the range of \$19.50 to \$20. One mill has reduced its offering price on No. 1 steel and a flattening-out of the market is seen by some dealers. Increased activity has occurred in cast scrap and specialty values have advanced again this week.

St. Louis

An East Side mill bought approximately 10,000 tons of No. 2 heavy melting steel at 50c. a ton above the previous price it paid. The purchase is for shipment over the next 60 days and four dealers

participated. The market is steady. More scrap is coming into the market as result of higher prices.

Cincinnati

The old materials market closed the current week unsettled and with the tendency toward softness. Mill reluctance to pay higher prices and their tendency to back away from the market about the middle of the past week halted expansion of dealers' bids and brought a general uncertainty as to the future. Dealers are generally marking time to properly appraise the present situation and are waiting to see just what will happen.

New York

The vessel shortage apparent immediately after hostilities were declared has been alleviated somewhat in the past week and shipments abroad are at a better rate. Some brokers have advanced buying prices 50c. a ton. Material is said to be coming out much more freely. With some stability established in the eastern Pennsylvania market, buying prices on cars remain unchanged this week, and in general the local market is marking time. Foundry items are still strong. Foundries in the East have been said to have paid anywhere from \$27.50 to \$30 a ton for 2-ft. rails, delivered.

Detroit

As indicated by developments more than a week ago, high prices which brought out substantial stocks of scrap from dealers' yards have neutralized bullish tendencies and created a leveling off in market sentiment and activity. Net result has been a decrease in almost all prices as scrap tended to seek its natural level. There is no indication of weakness or softness in the market, but prices locally are down approximately 50c. a ton compared with a week ago. Some moderate decreases still are anticipated.

Boston

Prices for domestic delivery in most cases have advanced further. Shafting and breakable cast are 50c. a ton higher than a week ago, steel turnings and blast furnace material about \$1, and yard prices on Nos. 1 and 2 steel 25c. higher. Skeleton is inactive and unchanged in price. Shafting, breakable cast, turnings and blast furnace material are moving in increasing volume. The export market has taken on a new lease of life. A Greek steamer left here the past week with 8200 tons for England, and arrangements have been made for quite a few English steamers to load in Boston during the next two months.

Toronto

Steel scrap prices were marked up 25c. per ton at the week-end by Canadian dealers, bringing dealers' offering price for No. 1 heavy melting to \$10.50; No. 2, to \$9.25 and mixed dealers steel to \$8 per gross ton delivered Toronto yards. Similar advances are reported for the Montreal market. Other items on the list, however, were firm but unchanged. Scrap consumers continue to hold orders to a minimum and new contracts are for short terms. No large awards have been announced either for spot or future delivery.

Iron and Steel Scrap Prices

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$23.00 to \$24.00
Railroad heavy melting	26.00 to 26.50
No. 2 heavy melting	21.00 to 22.00
Scrap rails	26.50 to 27.00
Rails 3 ft. and under	26.50 to 27.00
Comp. sheet steel	23.00 to 24.00
Hand bundled sheets	22.00 to 23.00
Heavy steel axle turn.	21.00 to 22.00
Machine shop turnings	14.00 to 14.50
Short shov. turnings	17.50 to 18.00
Mixed bor. & turn.	13.00 to 13.50
Cast iron borings	13.00 to 13.50
Cast iron carwheels	21.50 to 22.00
Heavy breakable cast.	19.00 to 19.50
No. 1 cupola cast.	22.50 to 23.00
RR. knuckles & coup.	28.00 to 28.50
Rail coil springs	28.00 to 28.50
Rail leaf springs	28.00 to 28.50
Rolled steel wheels	28.00 to 28.50
Low phos. billet crops	29.50 to 30.00
Low phos. punchings	25.50 to 26.00
Low phos. heavy plate	25.50 to 26.00
Railroad malleable	24.50 to 25.00

Correction—In the Oct. 5 issue, heavy steel axle turnings should have been quoted at \$22 to \$22.50 a ton, and machine shop turnings should have been quoted at \$14 to \$14.50 a ton.

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$23.00
No. 2 hvy. mltng. steel	20.00
Hydraulic bund., new	\$22.00 to 23.00
Hydraulic bund., old	18.00 to 18.50
Steel rails for rolling	21.50
Cast iron carwheels	22.00 to 22.50
Hvy. breakable cast.	21.00 to 21.50
No. 1 cast	24.50 to 25.00
Stove plate (steel wks.)	18.50 to 19.00
Railroad malleable	22.00
Machine shop turn.	14.00 to 14.50
No. 1 blast furnace	12.50 to 13.00
Cast borings	12.50 to 13.00
Heavy axle turnings	17.00 to 17.50
No. 1 low phos. hvy.	25.50 to 26.00
Couplers & knuckles	26.00
Rolled steel wheels	26.00
Steel axles	24.50 to 25.00
Shafting	24.50 to 25.00
Spec. iron & steel pipe	16.50 to 17.00
No. 1 forge fire	16.50 to 17.00
Cast boring (chem.)	Nominal

CHICAGO

Delivered to Chicago district consumers:

Per Gross Ton	
Hvy. mltng. steel	\$19.50 to \$20.00
Auto. hvy. mltng. steel alloy free	17.75 to 18.25
No. 2 auto steel	15.00 to 15.50
Shoveling steel	19.50 to 20.00
Factory bundles	18.50 to 19.00
Dealers' bundles	17.25 to 17.75
Drop forge flashings	17.50 to 18.00
No. 1 busheling	17.75 to 18.25
No. 2 busheling, old	9.00 to 9.50
Rolled carwheels	22.00 to 22.50
Railroad tires, cut	22.25 to 22.75
Railroad leaf springs	22.00 to 22.50
Steel coup. & knuckles	22.00 to 22.50
Axle turnings	18.00 to 18.50
Coil springs	23.00 to 23.50
Axle turn. (elec.)	19.75 to 20.25
Low phos. punchings	22.00 to 22.50
Low phos. plates 12 in. and under	22.00 to 22.50
Cast iron borings	11.75 to 12.25
Short shov. turn.	12.75 to 13.25
Machine shop turn.	11.75 to 12.25
Rerolling rails	22.75 to 23.25
Steel rails under 3 ft.	22.25 to 21.75
Steel rails under 2 ft.	22.25 to 23.75
Angle bars, steel	22.25 to 22.75
Cast iron carwheels	17.75 to 18.25
Railroad malleable	22.00 to 22.50
Agric. malleable	17.00 to 17.50

Per Net Ton

Iron car axles	\$23.75 to \$24.25
Steel car axles	23.75 to 24.25
Locomotive tires	17.50 to 18.00
Pipes and flues	14.50 to 15.00
No. 1 machinery cast.	17.00 to 17.50
Clean auto. cast	17.50 to 18.00
No. 1 railroad cast.	16.25 to 16.75
No. 1 agric. cast	14.50 to 15.00
Stove plate	12.50 to 13.00
Grate bars	13.00 to 13.50
Brake shoes	13.50 to 14.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$21.50 to \$22.00
No. 2 hvy. mltng. steel	20.00 to 20.50
Low phos. plate	23.50 to 24.00
No. 1 busheling	20.50 to 21.00
Hydraulic bundles	21.00 to 21.50
Machine shop turn.	12.50 to 13.00

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$20.00 to \$20.50
No. 2 hvy. mltng. steel	18.50 to 19.00
Comp. sheet steel	19.00 to 19.50
Light bund. starapings	15.50 to 16.00
Drop forge flashings	19.00 to 19.50
Machine shop turn.	12.00 to 12.50
Short shov. turn.	12.75 to 13.25
No. 1 busheling	18.75 to 19.25
Steel axle turnings	17.00 to 17.50
Low phos. billet and bloom crops	24.00 to 24.50
Cast iron borings	12.50 to 13.00
Mixed bor. & turn.	12.50 to 13.00
No. 2 busheling	12.50 to 13.00
No. 1 cupola cast.	21.50 to 22.00
Railroad grate bars	14.50 to 15.00
Stove plate	14.50 to 15.00
Rails under 3 ft.	24.00 to 24.50
Rails for rolling	22.75 to 23.25
Railroad malleable	21.25 to 21.75

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$21.50 to \$22.00
No. 2 hvy. mltng. steel	19.50 to 20.00
Scrap rails	21.00 to 21.50
New hvy. b'ndled sheets	19.00 to 19.50
Old hydraul. bundles	18.00 to 18.50
Drop forge flashings	19.50 to 20.00
No. 1 bushelings	19.50 to 20.00
Machine shop turn.	11.50 to 12.00
Shov. turnings	13.00 to 13.50
Mixed bor. & turn.	11.50 to 12.00
Cast iron borings	11.50 to 12.00
Knuckles & couplers	25.00 to 27.00
Coil & leaf springs	25.00 to 27.00
Rolled steel wheels	25.00 to 27.00
No. 1 machinery cast.	20.00 to 20.50
No. 1 cupola cast.	19.00 to 19.50
Stove plate	16.00 to 16.50
Steel rails under 3 ft.	23.50 to 24.00
Cast iron carwheels	21.00 to 21.50
Railroad malleable	21.50 to 22.00

ST. LOUIS

Dealers' buying prices per gross ton delivered to consumer:

Selected hvy. melting	\$18.00 to \$18.50
No. 1 hvy. melting	17.75 to 18.25
No. 2 hvy. melting	17.00 to 17.50
No. 1 locomotive tires	17.50 to 18.00
Misc. stand. sec. rails	18.00 to 18.50
Railroad springs	21.50 to 22.00
Bundled sheets	13.00 to 13.50
No. 1 busheling	14.00 to 14.50
Cast bor. & turn.	8.00 to 8.50
Machine shop turn.	8.00 to 8.50
Heavy turnings	12.50 to 13.00
Rails for rolling	20.50 to 21.00
Steel car axles	21.00 to 21.50
No. 1 RR. wrought	12.00 to 12.50
No. 2 RR. wrought	17.00 to 17.50
Steel rails under 3 ft.	21.50 to 22.00
Steel angle bars	20.00 to 20.50
Cast iron carwheels	20.00 to 20.50
No. 1 machinery cast.	19.00 to 19.50
Railroad malleable	17.00 to 17.50
No. 1 railroad cast.	15.00 to 15.50
Stove plate	12.00 to 12.50
Grate bars	10.50 to 11.00
Brake shoes	12.50 to 13.00

CINCINNATI

Dealers' buying prices per gross ton at yards:

No. 1 hvy. mltng. steel	\$16.50 to \$17.00
No. 2 hvy. mltng. steel	14.50 to 15.00
Scrap rails for mltng.	21.00 to 21.50
Loose sheet clippings	12.00 to 12.50
Hydrau. b'ndled sheets	16.00 to 16.50
Cast iron borings	6.50 to 7.00
Machine shop turn.	7.50 to 8.00
No. 1 busheling	12.50 to 13.00
No. 2 busheling	5.50 to 6.00
Rails for rolling	22.00 to 22.50
No. 1 locomotive tires	18.00 to 18.50
Short rails	23.50 to 24.00
Cast iron carwheels	18.00 to 18.50
No. 1 machinery cast.	19.50 to 20.00
No. 1 railroad cast.	18.00 to 18.50
Burnt cast	10.75 to 11.25
Stove plate	10.75 to 11.25
Agricul. malleable	16.00 to 16.50
Railroad malleable	19.00 to 19.50
Mixed hvy. cast.	17.00 to 17.50

BIRMINGHAM

Per gross ton delivered to consumer:

Hvy. melting steel	\$13.00
Scrap steel rails	15.00
Short shov. turnings	8.50
Stove plate	9.50
Steel axles	18.50
Iron axles	18.50
No. 1 RR. wrought	12.50
Rails for rolling	18.00
No. 1 cast	16.00
Tramcar wheels	16.00

DETROIT

Dealers' buying prices per gross ton:

No. 1 hvy. mltng. industrial steel	\$16.50 to \$17.00
No. 2 hvy. mltng. steel	15.50 to 16.00
Borings and turnings	10.00 to 10.50
Long turnings	9.00 to 9.50
Short shov. turnings	12.50 to 13.00
No. 1 machinery cast.	16.50 to 17.00
Automotive cast.	17.50 to 18.00
Hvy. breakable cast.	14.00 to 14.50
Stove plate	11.00 to 11.50
Hydraul. comp. sheets	18.50 to 19.00
New factory bushel.	15.50 to 16.00
Sheet clippings	13.50 to 14.00
Flashings	15.00 to 15.50
Low phos. plate scrap	17.00 to 17.50

NEW YORK

Dealers' buying prices per gross ton on cars:

No. 1 hvy. mltng. steel	\$16.50 to \$17.00
No. 2 hvy. mltng. steel	13.50 to 14.50
Hvy. breakable cast.	16.50 to 17.00
No. 1 machinery cast.	16.50 to 17.50
No. 2 cast	14.50 to 15.00
Stove plate	13.50 to 14.50
Steel car axles	19.00 to 20.00
Shafting	19.00 to 20.00
No. 1 RR. wrought	14.00 to 15.00
No. 1 wrought long	12.50 to 13.00
Spec. iron & steel pipe	13.50 to 14.00
Rails for rolling	19.00 to 20.00
Clean steel turnings*	9.00 to 10.00
Cast borings*	8.00 to 9.00
No. 1 blast furnace	8.00 to 9.00
Cast borings (chem.)	Nominal
Unprepared yard scrap	9.00 to 9.50
Light iron	5.00 to 5.50

Per gross ton, delivered local foundries:
No. 1 machin. cast† \$18.50 to \$19.00
No. 2 cast† 15.50 to 16.00

* \$1.50 less for truck loads.

† Northern N. J. prices are \$2 to \$2.50 higher.

BOSTON

Dealers' buying prices per gross ton:

Breakable cast	\$15.50 to \$15.75
Machine shop turn.	9.00 to 9.25
Mixed bor. & turn.	7.50 to 7.75
Bun. skeleton long	12.50 to 12.75
Shafting	19.00 to 19.50
Cast bor. chemical	6.00 to 6.50

Per gross ton delivered consumers' yards:
Textile cast \$18.00 to \$19.00
No. 1 machine cast 18.00 to 19.00

Per gross ton delivered dealers' yards:
No. 1 hvy. mltng. steel \$16.25 to \$16.75
No. 2 steel 15.25 to 15.75

PACIFIC COAST

Dealers' buying prices per gross ton on cars:

No. 1 hvy. mltng. steel	\$14.35
No. 2 hvy. mltng. steel	13.35

CANADA

Dealers' buying prices at these yards, per gross ton:

Toronto Montreal	
No. 1 hvy. mltng. steel	\$9.75 \$9.25
No. 2 hvy. mltng. steel	8.50 8.00
Mixed dealers steel	7.25 6.75
Drop forge flashings	8.75 8.25
New loose clippings	4.75 4.25
Busheling	4.25 3.75
Scrap pipe	4.75 4.25
Steel turnings	4.75 4.25
Cast borings	4.25 3.75
Machinery cast	16.50 16.00
Dealers cast	15.00 14.50
Stove plate	10.00 9.50

EXPORT

Dealers' buying prices per gross ton:

New York, truck lots, delivered, barges	
No. 1 hvy. mltng. steel	\$17.00 to \$17.50
No. 2 hvy. mltng. steel	15.50 to 16.50
No. 2 cast	15.00 to 15.50
Stove plate	13.50 to 14.50

Boston on cars at Army Base or Mystic Wharf

No. 1 hvy. mltng. steel	\$17.50 to \$18.50
No. 2 hvy. mltng. steel	17.00 to 17.25
Rails (scrap)	18.00 to 18.50

Philadelphia, delivered alongside boats, Port Richmond.

No. 1 hvy. mltng. steel	Nominal
No. 2 hvy. mltng. steel	Nominal

PRICES ON FINISHED AND SEMI-FINISHED IRON AND STEEL

Steel prices on these pages are base prices only and f.o.b. mill unless otherwise indicated. On some products either quantity deductions or quantity extras apply. In many cases gage, width, cutting, physical, chemical extras, etc., apply to the base price. Actual realized prices to the mill, therefore, are affected by extras, deductions, and in most cases the amount of freight which must be absorbed in order to meet competition

SEMI-FINISHED STEEL

Billets, Blooms and Slabs

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point (Rerolling only). Prices delivered Detroit are \$2 higher. F.o.b. Duluth, billets only, \$2 higher.

Per Gross Ton
Rerolling\$34.00
Forging quality 40.00

Sheet Bars

Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

Per Gross Ton
Open hearth or bessemer\$34.00

Skelp

Pittsburgh, Chicago, Youngstown, Coatesville, Pa., Sparrows Point, Md.

Per Lb.
Grooved, universal and sheared1.90c.

Wire Rods

(No. 5 to 9/32 in.)

Per Gross Ton
Pittsburgh, Chicago or Cleveland\$43.00
Worcester, Mass. 45.00
Birmingham 43.00
San Francisco 62.00
Rods over 9/32 in. or 47/64 in., inclusive, \$5 a ton over base.

SOFT STEEL BARS

Base per Lb.
Pittsburgh, Chicago, Gary, Cleveland, Buffalo and Birmingham 2.15c.
Detroit, delivered 2.25c.
Duluth 2.25c.
Philadelphia, delivered 2.47c.
New York 2.49c.
On cars dock Gulf ports 2.50c.
On cars dock Pacific ports 2.75c.

RAIL STEEL BARS

(For merchant trade)

Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham 2.15c.
On cars dock Tex. Gulf ports 2.50c.
On cars dock Pacific ports 2.75c.

BILLET STEEL REINFORCING BARS

(Straight lengths as quoted by distributors)

Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Cleveland, Youngstown or Sparrows, Pt. 2.15c.
Detroit, delivered 2.25c.
On cars dock Tex. Gulf ports 2.50c.
On cars dock Pacific ports 2.60c.

RAIL STEEL REINFORCING BARS

(Straight lengths as quoted by distributors)

Pittsburgh, Chicago, Gary, Buffalo, Cleveland, Youngstown or Birmingham 2.15c.
Detroit, delivered 2.25c.
On cars dock Tex. Gulf ports 2.50c.
On cars dock Pacific ports 2.60c.

IRON BARS

Chicago and Terra Haute 2.15c.
Pittsburgh (refined) 3.60c.

COLD FINISHED BARS AND SHAFTING*

Pittsburgh, Buffalo, Cleveland, Chicago, and Gary 2.65c.
Detroit 2.70c.

* In quantities of 10,000 to 19,999 lb.

PLATES

Base per Lb.

Pittsburgh, Chicago, Gary, Birmingham, Sparrows Point, Cleveland Youngstown, Coatesville, Claymont, Del. 2.10c. to 2.35c.
Philadelphia, del'd 2.15c. to 2.40c.
New York, del'd 2.29c. to 2.54c.
On cars dock Gulf ports 2.45c.
On cars dock Pacific ports 2.60c.
Wrought iron plates, P'tg. 3.80c.

FLOOR PLATES

Pittsburgh or Chicago 3.35c.
New York, del'd 3.71c.
On cars dock Gulf ports 3.70c.
On cars dock Pacific ports 3.95c.

STRUCTURAL SHAPES

Base per Lb.

Pittsburgh, Chicago, Gary, Buffalo, Bethlehem or Birmingham 2.10c.
Philadelphia, del'd 2.215c.
New York, del'd 2.27c.
On cars dock Gulf ports 2.45c.
On cars dock Pacific ports 2.70c.

STEEL SHEET PILING

Base per Lb.

Pittsburgh, Chicago or Buffalo 2.40c.
On cars dock Gulf ports 2.85c.
On cars dock Pacific ports 2.90c.

RAILS AND TRACK SUPPLIES

F.o.b. Mill

Standard rails, heavier than 60 lb., per gross ton\$40.00
Angle bars, per 100 lb. 2.70

F.o.b. Basing Points

Light rails (from billets) per gross ton\$40.00
Light rails (from rail steel) per gross ton 39.00

Base per Lb.

Cut spikes 3.00c.
Screw spikes 4.55c.
Tie plates, steel 2.15c.
Tie plates, Pacific Coast ports. 2.25c.
Track bolts, to steam railroads 4.15c.
Track bolts to jobbers, all sizes (per 100 counts) 65-5

Basing points on light rails are Pittsburgh, Chicago and Birmingham; on spikes and tie plates, Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minneapolis, Colo., Birmingham and Pacific Coast ports; on tie plates alone, Steelton, Pa., Buffalo; on spikes alone, Youngstown, Lebanon, Pa., Richmond, Va.

SHEETS

Hot Rolled

Base per Lb.

Pittsburgh, Gary, Birmingham, Buffalo, Sparrows Point, Cleveland, Youngstown, Middletown or Chicago 2.00c.
Detroit, delivered 2.10c.
Philadelphia, delivered 2.17c.
Granite City 2.10c.
On cars dock Pacific ports 2.50c.
Wrought iron, Pittsburgh 4.10c.

Cold Rolled*

Pittsburgh, Gary, Buffalo, Youngstown, Cleveland, Middletown or Chicago 3.05c.
Detroit, delivered 3.15c.
Granite City 3.15c.
Philadelphia, delivered 3.37c.
On cars dock Pacific ports 3.65c.

* Mill run sheets are 10c. per 100 lb. less than base; and primes only, 25c. above base.

From May 10 up to and including May 15, reductions from the base price of hot and cold rolled sheets running from \$4 to \$8 a ton were prevalent. Concessions withdrawn on May 15.

Subsequent to May 15, many orders originally placed at \$4 to \$6 below the base price were adjusted to the full \$8 concession.

Galvanized Sheets, 24 Gage
Pittsburgh, Chicago, Gary, Sparrows Point, Buffalo, Middletown, Youngstown or Birmingham 3.50c.
Philadelphia, del'd 3.67c.
Granite City 3.60c.
On cars dock Pacific ports 4.00c.
Wrought iron, Pittsburgh 6.10c.

Electrical Sheets (F.o.b. Pittsburgh)

Base per Lb.

Field grade 3.20c.
Armature 3.55c.
Electrical 4.05c.
Motor 4.95c.
Dynamo 5.65c.
Transformer 72 6.15c.
Transformer 65 7.15c.
Transformer 58 7.65c.
Transformer 52 8.45c.

Silicon Strip in coils—Sheet price plus silicon sheet extra width extra plus 25c per 100 lb. for coils. Pacific ports add 70c. a 100 lb.

Long Termes

No. 24 unassorted 8-lb. coating f.o.b. Pittsburgh or Gary... 3.80c.
F.o.b. cars dock Pacific ports. 4.50c.

Vitreous Enameling Stock, 20 Gage*

Pittsburgh, Chicago, Gary, Youngstown, Middletown or Cleveland 3.35c.
Detroit, del'd 3.45c.
Granite City 3.45c.
On cars dock Pacific ports 3.95c.

TIN MILL PRODUCTS

*Tin Plate

Per Base Box

Standard cokes, Pittsburgh, Chicago and Gary\$5.00
Standard cokes, Granite City... 5.10

* Prices effective Nov. 10 on shipments through first quarter of 1939.

Special Coated Manufacturing Termes

Per Base Box

Granite City\$4.40
Pittsburgh or Gary 4.80

Roofing Terne Plate

(F.o.b. Pittsburgh)

(Per Package, 112 sheets, 20 x 28 in.)
8-lb. coating I.C.\$12.00
15-lb. coating I.C. 14.00
20-lb. coating I.C. 15.00
25-lb. coating I.C. 16.00
30-lb. coating I.C. 17.25
40-lb. coating I.C. 19.50

Black Plate, 29 gage and lighter

Pittsburgh, Chicago and Gary 3.05c.
Granite City 3.15c.
On cars dock Pacific ports, boxed 4.00c.

HOT ROLLED STRIP

(Widths up to 12 in.)

Base per Lb.

Pittsburgh, Chicago, Gary, Cleveland, Middletown, Youngstown or Birmingham 2.00c.
Detroit, delivered 2.10c.

Cooperage Stock

Pittsburgh & Chicago 2.10c.

From May 10 up to and including May 15, reductions in the base price of hot rolled strip running from \$4 to \$8 a ton were prevalent. Concessions withdrawn on May 15.

Subsequent to May 15, many orders originally placed at \$4 to \$6 below the base price were adjusted to the full \$8 concession.

COLD ROLLED STRIP*

Base per Lb.

Pittsburgh, Youngstown or Cleveland 2.80c.
Chicago 2.90c.
Detroit, delivered 2.90c.
Worcester 3.00c.

* Carbon 0.25 and less.

Commodity Cold Rolled Strip

Pittsburgh, Youngstown, or Cleveland 2.95c.
Detroit, delivered 3.05c.
Worcester 3.35c.

From May 10 up to and including May 15, reductions from the base price of cold rolled strip amounting to \$4 a ton were prevalent. Concessions withdrawn on May 15.

COLD ROLLED SPRING STEEL

Pittsburgh

and

Cleveland Worcester

Carbon 0.26-0.50% 2.80c. 3.00c.
Carbon 0.51-0.75 4.30c. 4.50c.
Carbon 0.76-1.00 6.15c. 6.35c.
Carbon 1.01-1.25 8.35c. 8.55c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh, Chicago, Cleveland and Birmingham)

To Manufacturing Trade

	Per Lb.
Bright wire	2.60c.
Galvanized wire, base	2.65c.*
Spring wire	3.20c.

* On galvanizing wire to manufacturing trade, size and galvanizing extras are charged, the price Nos. 6 to 9 gage, inclusive, thus being 3.15c.

To the Trade

	Base per Keg
Standard wire nails	\$2.55
Coated nails	2.55
Cut nails, carloads	3.70

	Base per 100 Lb.
Annealed fence wire	\$2.90
Galvanized fence wire	3.30
Polished staples	3.35
Galvanized staples	3.85
Twisted barbed wire	3.15

Woven wire fence, Nos. 9 and 11 gage, base col.	70
Woven wire fence, 12½ gage and lighter, base col.	67
Single loop bale ties, base col.	56
Stand. 2 pt., 12.5 gage barbed cattle wire, per 80 rod spool.	\$2.70
Stand. 2 pt., 12.5 gage barbed hog wire, per 80 rod spool.	\$2.88

Note: Birmingham base same on above items, except spring wire.

STEEL AND WROUGHT IRON PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills
F.o.b. Pittsburgh only on wrought iron pipe.

Steel		Wrought Iron	
In.	Black Galv.	In.	Black Galv.
1/4	56	1/4	56
1/2	59	1/2	59
3/4	63½	3/4	63½
1	66½	1	66½
1 1/8	68½	1 1/8	68½

Lap Weld		Lap Weld	
In.	Black Galv.	In.	Black Galv.
2	61	2	61
2½	63	2½	63
3	66	3	66
3½	68½	3½	68½
4	71	4	71

Butt weld, extra strong, plain ends		Butt weld, extra strong, plain ends	
In.	Black Galv.	In.	Black Galv.
1/4	54½	1/4	54½
1/2	56½	1/2	56½
3/4	61½	3/4	61½
1	65½	1	65½
1 1/8	67	1 1/8	67

Lap weld, extra strong, plain ends		Lap weld, extra strong, plain ends	
In.	Black Galv.	In.	Black Galv.
2	59	2	59
2½	63	2½	63
3	66½	3	66½
3½	68½	3½	68½
4	71	4	71

On butt weld and lap weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount of \$4 a ton higher than Pittsburgh or Lorain on lap weld and one point lower discount, or \$2 a ton higher, on all butt weld 8 in. and smaller.

Boiler Tubes

Seamless Steel and Lap Weld Commercial Boiler Tubes and Locomotive Tubes. Minimum Wall. (Net base prices per 100 ft. f.o.b. Pittsburgh in carload lots)

	Seamless	Lap Weld
	Cold Drawn	Hot Rolled
1 in. o.d. 13 B.W.G.	\$ 9.01	\$ 7.82
1½ in. o.d. 13 B.W.G.	10.67	9.26
2 in. o.d. 13 B.W.G.	11.70	10.23
2½ in. o.d. 13 B.W.G.	13.42	11.04
3 in. o.d. 13 B.W.G.	15.03	13.04
3½ in. o.d. 13 B.W.G.	16.76	14.54
4 in. o.d. 13 B.W.G.	18.45	16.01
4½ in. o.d. 13 B.W.G.	20.21	17.54
5 in. o.d. 13 B.W.G.	21.42	18.59
5½ in. o.d. 13 B.W.G.	22.48	19.50
6 in. o.d. 13 B.W.G.	23.37	20.62
6½ in. o.d. 13 B.W.G.	25.30	22.66
7 in. o.d. 13 B.W.G.	27.43	24.35
7½ in. o.d. 13 B.W.G.	29.01	26.87
8 in. o.d. 13 B.W.G.	30.93	28.14

Extras for less carload quantities:	
40,000 lb. or ft. or over.	Base
20,000 lb. or ft. to 39,999 lb. or ft.	5%
10,000 lb. or ft. to 19,999 lb. or ft.	10%
5,000 lb. or ft. to 9,999 lb. or ft.	30%
2,000 lb. or ft. to 4,999 lb. or ft.	45%
Under 2,000 lb. or ft.	65%

CAST IRON WATER PIPE

Per Net Ton

*6-in. and larger, del'd Chicago.	\$54.80
6-in. and larger, del'd New York	52.20
*6-in. and larger, Birmingham.	46.00
6-in. and larger, f.o.b. deck, San Francisco or Los Angeles.	52.00
F.o.b. dock, Seattle.	52.00
4-in. f.o.b. dock, San Francisco or Los Angeles	55.00
F.o.b. dock, Seattle.	52.00

Class "A" and gas pipe, \$3 extra
4-in. pipe is \$3 a ton above 6-in.

Prices for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is \$45, Birmingham, and \$53.90 delivered Chicago.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland Birmingham or Chicago)

Per Cent Off List

Machine and carriage bolts:	
½ in. and 6 in. and smaller.	68½
Larger and longer up to 1 in.	66
1½ in. and larger	64
Lag bolts	66
Plow bolts, Nos. 1, 2, 3, and 7	68½
Hot pressed nuts, and c.p.c. and t-nuts, square or hex. blank or tapped:	
½ in. and smaller	67
9/16 in. to 1 in. inclusive.	64
1½ in. and larger	62

On the above items with the exception of plow bolts, there is an additional allowance of 10 per cent for full container quantities.

On all of the above items there is an additional 5 per cent allowance for carload shipments.

Semi-fin. hexagon nuts U.S.S. S.A.E.	
½ in. and smaller	67
9/16 to 1 in.	64
1½ in. and larger.	62

In full container lots, 10 per cent additional discount.

Stove bolts in packages, with nuts loose	72½
Stove bolts in packages, with nuts attached, add 15% extra.	
Stove bolts in bulk	83½

On stove bolts freight is allowed to destination on 200 lb. and over.

Large Rivets

(½ in. and larger)

Base per 100 Lb.

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	\$3.40
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Small Rivets

(7/16 in. and smaller)

Per Cent Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	65 and 10
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Cap and Set Screws

(Freight allowed up to 65c. per 100 lb. based on Cleveland, Chicago or New York on lots of 200 lb. or over.)

Per Cent Off List

Milled hexagon head, cap screws, 1 in. dia. and smaller.	50 and 10
Milled headless set screws, cut thread ¼ in. and larger	64
3/16 in. and smaller	73
Upset hex. head cap screws U.S.S. or S.A.E. thread 1 in. and smaller	70
Upset set screws, cup and oval points	75
Milled studs	62

Alloy Steel

Alloy Steel Blooms, Billets and Slabs

F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem.
Base price, \$56.00 a gross ton.

Alloy Steel Bars

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.
Open-hearth grade, base. 2.70c.
Delivered, Detroit

RAW MATERIALS PRICES

PIG IRON

No. 2 Foundry

F.o.b. Everett, Mass.	\$24.00.
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa., and Sparrows Point, Md.	24.00
Delivered Brooklyn or Jersey City	26.50
Delivered Philadelphia	25.53
F.o.b. Neville Island, Erie, Pa., Toledo, Chicago, Granite City, Cleveland and Youngstown..	24.84
F.o.b. Buffalo	23.00
F.o.b. Detroit	23.00
Southern, delivered Cincinnati.	23.06
Northern, delivered, Cincinnati.	23.44
F.o.b. Duluth	23.50
F.o.b. Provo, Utah	21.00
Delivered, San Francisco, Los Angeles or Seattle	26.50
F.o.b. Birmingham*	19.38

* Delivered prices on southern iron for shipment to northern points are 38c. a ton below delivered prices from nearest northern basing point on iron with phosphorus content of 0.70 per cent and over.

Malleable

Base prices on malleable iron are 50c. a ton above No. 2 foundry quotations at Everett, Eastern Pennsylvania furnaces, Erie and Buffalo. Elsewhere they are the same, except at Birmingham and Provo, which are not malleable iron basing points.

Basic

F.o.b. Everett, Mass.	\$23.50
F.o.b. Bethlehem, Birdsboro, Swedeland and Steelton, Pa., and Sparrows Point, Md.	23.50
F.o.b. Buffalo	22.00
F.o.b. Neville Island, Erie, Pa., Toledo, Chicago, Granite City, Cleveland and Youngstown..	22.50
Delivered Philadelphia	24.34
Delivered Canton, Ohio	23.89
Delivered Mansfield, Ohio	24.44
F.o.b. Birmingham	18.00

Bessemer

F.o.b. Buffalo	\$24.00
F.o.b. Everett, Mass.	25.00
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa.	25.00
Delivered Newark or Jersey City	26.53
Erie, Pa., and Duluth	24.00
F.o.b. Neville Island, Toledo, Chicago and Youngstown ..	23.50
F.o.b. Birmingham	24.00
Delivered Cincinnati	24.11
Delivered Canton, Ohio	24.89
Delivered Mansfield, Ohio	25.44

Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Buffalo....\$28.50

Gray Forge

Valley or Pittsburgh furnace..\$22.50

Charcoal

Lake Superior furnace	\$27.00
Delivered Chicago	30.34

Canadian Pig Iron

Per Gross Ton

Foundry iron	\$27.50 base
Malleable	28.00 base
Basic	27.50 base

Toronto

Foundry iron	\$25.50 base
Malleable	26.00 base
Basic	25.50 base

On all grades 2.25 per cent silicon and under is base. For each 25 points of silicon over 2.25 per cent an extra of 25c. is charged.

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.

Per Gross Ton

Domestic, 80% (carload).....\$100.00

Spiegeleisen

Per Gross Ton Furnace
Domestic, 19 to 21%.....\$32.00
Domestic, 26 to 28%.....39.50

Electric Ferrosilicon

Per Gross Ton Delivered;
Lump Size

50% (carload lots, bulk)\$69.50*
50% (ton lots in 50 gal. bbl.).. 80.50*
75% (carload lots, bulk)126.00*
75% (ton lots in 50 gal. bbl.)..139.00*

Bessemer Ferrosilicon

F.o.b. Furnace, Jackson, Ohio

Per Gross Ton

10.00 to 10.50%.....\$32.50
For each additional 0.50% silicon up to 12%, 50c. per ton is added. Above 12% add 75c. per ton.
For each unit of manganese over 2%, \$1 per ton additional.
Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

Silvery Iron

Per Gross Ton

F.o.b. Jackson, Ohio, 5.00 to 5.50%\$26.50
For each additional 0.5% silicon up to 12%, 50c. a ton is added. Above 12% add 75c. a ton.
The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed.
Base prices at Buffalo are \$1.25 a ton higher than at Jackson.
Manganese, each unit over 2%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.

Ferrochrome

Per Lb. Contained Cr., Delivered
Carlots, Lump Size, on Contract

4 to 6% carbon10.50c.*
2% carbon16.50c.*
1% carbon17.50c.*
0.10% carbon.....19.50c.*
0.06% carbon.....20.00c.*

Silico-Manganese

Per Gross Ton, Delivered, Lump
Size, Bulk, on Contract

3% carbon\$98.00
2.50% carbon103.00
2% carbon108.00
1% carbon118.00

Other Ferroalloys

Ferrotungsten, per lb. contained W del. carloads.... \$2.00
Ferrotungsten, 100 lbs. and less 2.25
Ferrovanadium, contract, per lb. contained V., delivered\$2.70 to \$2.90†
Ferrochromium, per lb. contained chromium, f.o.b. Niagara Falls, N. Y., ton lots \$2.25†
Ferrocobalt, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace carload and contract per net ton\$142.50
Ferrocobalt, 17 to 20% Ti, 3 to 5% C, f.o.b. furnace, carload and contract, per net ton\$157.50
Ferrophosphorus, electric, or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage, freight equalized with Rockdale, Tenn., per gross ton\$58.50
Ferrophosphorus, electrolytic, 23-26% in car lots, f.o.b. Monsanto (Siglo), Tenn., 24%, per gross ton, \$3 unitage, freight equalized with Nashville\$75.00
Ferromolybdenum, per lb. Mo. f.o.b. furnace95c.
Calcium molybdate, per lb. Mo. f.o.b. furnace80c.
Molybdenum oxide briquettes 48-52% Mo; per lb. contained Mo, f.o.b. Langeloth, Pa.80c.

* Spot prices are \$5 per ton higher.
† Spot prices are 10c. per lb. of contained element higher.

*ORES

Lake Superior Ores Delivered Lower Lake Ports

Per Gross Ton

Old range, Bessemer, 51.50%...\$5.25
Old range, non-Bessemer, 51.50% 5.10
Messabi, Bessemer, 51.50%..... 5.10
Messabi, non-Bessemer, 51.50% 4.95
High phosphorus, 51.50% 4.85

Foreign Ore*

C.i.f. Philadelphia or Baltimore

Per Unit

Iron, low phos., copper free, 55 to 58% dry, Algeria 12c.
Iron, low phos., Swedish, average, 68½% iron 12c.
Iron, basic or foundry, Swedish, aver. 65% iron..... 11c.
Iron, basic or foundry, Russian, aver. 65% ironNominal
Man., Caucasian, washed 52% 44c.
Man., African, Indian, 44-48% 41c.
Man., African, Indian, 49-51% 45c.
Man., Brazilian, 46 to 48% 40c.

Per Short Ton Unsu

Tungsten, Chinese, Wolframite, duty paid, delivered..\$23.00 to \$24.00
Tungsten, domestic, scheelite delivered 25.00
Chrome or (lump) c.i.f. Atlantic Seaboard, per gross ton: South African (low grade)\$17.00
Rhodesian, 45% 21.00
Rhodesian, 48% 25.00
Turkish, 48-49% 25.50
Turkish, 45-46% 23.00
Turkish, 40-41% 18.50
Chrome concentrates (Turkish) c.i.f. Atlantic Seaboard, per gross ton: 50%\$26.00
48-49% 25.00

* All foreign ore prices are nominal.

FLUORSPAR

Per Net Ton

Domestic washed gravel, 85-5, f.o.b. Kentucky and Illinois mines, all rail\$20.00
Domestic, f.o.b. Ohio River landing barges\$20.00
No. 2 lump, 85-5, f.o.b. Kentucky and Ill. mines\$20.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid\$22.50 to \$23.50
Domestic No. 1 ground bulk, 96 to 98% calcium fluoride, not over 2½% silicon, f.o.b. Illinois and Kentucky mines\$31.60

FUEL OIL

Per Gal.

No. 2, f.o.b. Bayonne, N. J....4.375c.
No. 6, f.o.b. Bayonne, N.J.2.74c.
No. 5 Bur. Stds., del'd Chicago 3.25c.
No. 6 Bur. Stds., del'd Chicago 2.75c.
No. 3 distillate, del'd Cleve'd. 5.375c.
No. 4 industrial, del'd Cleve'd. 5.125c.
No. 5 industrial, del'd Cleve'd. 4.25c.
No. 6 industrial, del'd Cleve'd. 4.00c.

COKE

Per Net Ton

Furnace, f.o.b. Connellsville, Prompt\$4.75 to \$5.00
Foundry, f.o.b. Connellsville, Prompt 5.50 to 6.00
Foundry, by - product Chicago ovens 10.25
Foundry, by - product del'd New England... 12.50
Foundry, by - product del'd Newark or Jersey City10.88 to 11.40
Foundry, by - product Philadelphia 10.95
Foundry, by - product delivered Cleveland .. 10.30
Foundry, by - product delivered Cincinnati .. 9.75
Foundry, Birmingham.. 7.50
Foundry, by - product del'd St. Louis industrial district10.75 to 11.00
Foundry, from Birmingham, f.o.b. cars dock Pacific ports 14.75

IRON AND STEEL WAREHOUSE PRICES

PITTSBURGH*

	Base per Lb.
Plates	3.40c.
Shapes	3.40c.
Soft steel bars and small shapes	3.35c.
Reinforcing steel bars	2.70c.
Cold finished bars and screw stock	3.65c.
Hot rolled strip	3.60c.
Hot rolled sheets	3.35c.
Galv. sheets (24 ga.) 500 lb. to 1499 lb.	4.75c.
Wire, black, soft annealed....	3.15c.
Wire, galv., soft	3.55c.
Track spikes (1 to 24 kegs)....	3.60c.
Wire nails (in 100-lb. kegs)....	2.65c.

On plates, structurals, bars, strip and hot rolled sheets, base applied to orders of 400 to 1999 lb. On reinforcing bars base applies to orders of less than one ton and includes switching and starting charge.
All above prices for delivery within the Pittsburgh switching district.

NEW YORK

	Base per Lb.
Plates, 1/4 in. and heavier....	3.74c.
Structural shapes	3.75c.
Soft steel bars, round	3.84c.
Iron bars, Swed. charcoal	9.50c.
Cold-fin. shafting and screw stock:	
Rounds, squares, hexagons	4.09c.
Flats up to 12 in. wide....	4.09c.
Cold-rolled strip soft and quarter hard	3.51c.
Hot-rolled strip, soft O.H....	3.96c.
Hot-rolled sheets (8-30 ga.)..	3.58c.
Galv. sheets (24 ga.)	4.74c.
Long ternes (24 ga.)	5.50c.
Cold-rolled sheets (20 ga.) ..	4.60c.
Standard quality	4.85c.
Deep drawing	5.10c.
Stretcher leveled	7.35c.
SAE, 2300, hot-rolled	5.90c.
SAE, 3100, hot-rolled	8.75c.
SAE, 6100, hot-rolled annealed.	8.59c.
SAE, 2300, cold-rolled	8.19c.
SAE, 3100, cold-rolled, annealed	12.50c.
Floor plate, 1/4 in. and heavier	4.35c.
Standard tool steel.....	4.70c.
Wire, black, annealed (No. 9).	5.20c.
Wire, galv. (No. 9)	10.20c.
Open-hearth spring steel	
Common wire nails, per keg in lots of five kegs or more	

* For lots less than 2000 lb.
** For lots of 1500 lb. or more.

CHICAGO

	Base per Lb.
Plates and structural shapes....	3.55c.
Soft steel bars, rounds and angles	3.50c.
Soft steel squares, hexagons, channels and Tees	3.65c.
Hot rolled strip.....	3.60c.
Floor plates	5.15c.
Hot rolled sheets	3.35c.
Galvanized sheets	4.60c.
Cold rolled sheets	4.30c.
Cold finished carbon bars....	3.75c.
Above prices are subject to deductions and extras for quantity and are f.o.b. consumer's plant within Chicago free delivery zone.	

CLEVELAND

	Base per Lb.
Plates	3.40c.
Structural shapes	3.58c.
Soft steel bars	3.25c.
Reinfor. bars (under 2000 lb.)†	2.55c.
Cold-fin. bars (1000 lb., over.)	3.75c.
Hot-rolled strip	3.50c.
Cold rolled sheets	4.55c.
Cold-finished strip	3.20c.
Galvanized sheets (No. 24)....	4.62c.
Hot-rolled sheets	3.35c.
Floor plates, 3/16 in. and heavier	5.18c.
*Black ann'l'd wire, per 100 lb.	\$3.10
*No. 9 galv. wire, per 100 lb....	3.50
*Com. wire nails, base per keg	2.60
Hot rolled alloy steel (3100)....	5.85c.
Cold rolled alloy steel (3115)....	6.75c.

* For 5000 lb. or less.
† 500 lb. base quantity.
Prices shown on hot rolled bars, strip, sheets, shapes and plates are for 400 to 1999 lb. Alloy steel, 1000 lb. and over; galvanized sheets, 150 to 1499 lb.; cold rolled sheets, 399 lb. and under.

ST. LOUIS

	Base per Lb.
Plates and structural shapes....	3.47c.
Bars, soft steel (rounds and flats)	3.62c.
Bars, soft steel (squares, hexagons, ovals, half ovals and half rounds)	3.77c.
Cold fin. rounds, shafting, screw stock	4.02c.
Galv. sheets (24 ga.)	4.52c.
Hot rolled sheets	3.38c.
Galv. corrugated sheets, 24 ga. and heavier*	4.57c.
Structural rivets	5.02c.

* No. 26 and lighter take special prices.

BOSTON

	Base per Lb.
Structural shapes, 3 in. and larger	3.85c.
Plates, 1/4 in. and heavier....	3.85c.
Bars	3.88c.
Heavy hot rolled sheets.....	3.71c.
Hot rolled sheets	4.21c.
Hot rolled annealed sheets....	4.61c.
Galvanized sheets	4.61c.
Cold rolled sheets	4.71c.
The following quantity differentials apply: Less than 100 lb. plus \$1.50 per 100 lb.; 100 to 399 lb. plus \$6c.; 400 to 1999 lb. base; 2000 to 9999 lb. minus 20c.; 10,000 to 39,999 lb. minus 30c.; 40,000 lb. and over minus 40c.	

BUFFALO

	Base per Lb.
Plates	3.62c.
Floor plates	5.25c.
Struc. shapes	3.40c.
Soft steel bars	3.35c.
Reinforcing bars (20,000 lb. or more)	2.15c.
Cold-fin. flats, squares, rounds, and hex.	3.65c.
Hot-rolled sheets, 3/16 x 14 in. to 48 in. wide incl., also sizes No. 8 to 30 ga.	3.35c.
Galv. sheets (24 ga.)	4.70c.
Bands and hoops	3.32c.

NEW ORLEANS

	Base per Lb.
Mild steel bars	4.20c.
Reinforcing bars	3.24c.
Structural shapes	4.10c.
Plates	4.10c.
Hot-rolled sheets, No. 10.....	4.35c.
Steel bands	4.75c.
Cold-finished steel bars	5.10c.
Structural rivets	4.85c.
Boiler rivets	4.85c.
Common wire nails, base per keg	3.55
Bolts and nuts, per cent off list	60

REFRACTORIES PRICES

	Per 1000 f.o.b. Works
Fire Clay Brick	
Super-duty brick, at St. Louis.	\$60.80
First quality Pennsylvania, Maryland, Kentucky, Missouri and Illinois	47.50
First quality, New Jersey.....	52.50
Second quality, Pennsylvania, Maryland, Kentucky, Missouri and Illinois	42.75
Second quality, New Jersey....	49.00
No. 1 Ohio	39.90
Ground fire clay, per ton.....	7.10

	Per 1000 f.o.b. Works
Silica Brick	
Pennsylvania	\$47.50
Chicago District	55.10
Birmingham	47.50
Silica cement per net ton (East-ern)	8.55

	Net per Ton
Chrome Brick	
Standard f.o.b. Baltimore, Plymouth Meeting and Chester....	\$47.00
Chemically bonded f.o.b. Baltimore, Plymouth Meeting and Chester, Pa.	47.00

	Net per Ton
Magnesite Brick	
Standard f.o.b. Baltimore and Chester	\$67.00
Chemically bonded, f.o.b. Baltimore	57.00

	Net per Ton
Grain Magnesite	
Imported, f.o.b. Baltimore and Chester, Pa. (in sacks).....	\$45.00
Domestic, f.o.b. Baltimore and Chester in sacks	40.00
Domestic, f.o.b. Chewelah, Wash. (in bulk)	22.00

PHILADELPHIA

	Base per Lb.
*Plates, 1/4-in. and heavier ...	3.55c.
*Structural shapes	3.55c.
*Soft steel bars, small shapes, iron bars (except bands)....	3.85c.
†Reinforc. steel bars, square and deformed	2.61c.
Cold-finished steel bars	4.06c.
*Steel hoops	4.35c.
*Steel bands, No. 12 and 3/16 in. incl.	3.85c.
*Spring steel	5.00c.
†Hot-rolled anneal. sheets ...	3.55c.
†Galvanized sheets (No. 24)....	4.68c.
*Diam. pat. floor plates, 1/4 in.	5.25c.

*For quantities between 400 and 1999 lb.
†For 10 bundles or over.
‡For one to five tons.

BIRMINGHAM

	Base per Lb.
Bars and bar shapes.....	3.50c.
Structural shapes and plates....	3.55a
Hot rolled sheets No. 10 ga....	3.35c.
Galvanized sheets No. 24 ga....	4.75c.
Strip	3.60c.
Reinforcing bars	3.50c.
Floor plates	5.88
Cold finished bars	4.43
Machine and carriage bolts	50 & 10 off list
Rivets (structural) \$4.60 base	
On plates, shapes, bars, hot-rolled strip, heavy hot-rolled sheets, the base applies on 400 to 1999 lb. All prices are f.o.b. consumer plant.	

PACIFIC COAST

	San Francisco	Los Angeles	Seattle
Plates, tanks and U. M.	4.00c.	3.80c.	3.85c.
Shapes, standard	4.00c.	3.80c.	3.95c.
Soft steel bars..	4.00c.	3.80c.	3.90c.
Reinforcing bars, f.o.b. cars dock			
Pacific ports ..	2.275c.	open.	2.975c.
Hot-rolled sheets (No. 10)	3.75c.	4.00c.	3.70c.
Galv. sheets (No. 24 and lighter) ..	5.15c.	5.00c.	5.00c.
Galv. sheets (No. 22 and heavier) ..	5.40c.	5.00c.	5.00c.
Cold-finished steel			
Rounds	6.55c.	6.60c.	7.10c.
Squares and hexagons ...	7.80c.	7.85c.	7.10c.
Flats	8.30c.	8.35c.	8.10c.
Common wire nails—base per keg less carload	\$3.00	\$3.05	\$3.00

All items subject to differentials for quantity.

ST. PAUL

	Base per Lb.
Mild steel bars, rounds.....	4.10c.
Structural shapes	4.00c.
Plates	4.00c.
Cold-finished bars	4.83c.
Hot-rolled annealed sheets, No. 24	4.75c.
Galvanized sheets, No. 24....	5.00c.

On mild steel bars, shapes and plates the base applies on 400 to 14,999 lb. On hot-rolled sheets, galvanized sheets and cold-rolled sheets base applies on 15,000 lb. and over. Base on cold-finished bars is 1000 lb. and over of a size.

DETROIT

	Base per Lb.
Soft steel bars	3.33c.
Structural shapes	3.65c.
Plates	3.60c.
Floor plates	5.27c.
Hot-rolled sheets, 8 to 30 gages above 12 in. and 3/16 in., 24 in. to 48 in. wide	3.43c.
Cold-rolled sheets	4.50c.
*Galvanized sheets	4.59a.
Hot-rolled strip, under No. 12..	3.68c.
Hot-rolled strip, No. 12 and over	3.43c.
Cold-finished bars	3.80c.
Cold-rolled strip	3.55c.
Hot-rolled alloy steel (SAE 3100 Series)	5.97c.
Cold-rolled alloy (SAE 2300)....	8.45c.

Quantity extras apply to all items.
*Price applies only in metropolitan Detroit.

FABRICATED STEEL

... Lettings lower at 12,600 tons as against 15,400 tons last week ... New projects of 14,400 tons slightly higher than a week ago ... Plate awards call for 2020 tons.

NORTH ATLANTIC STATES AWARDS

- 1410 Tons, New York, apartment building, corner 69th Street and Fifth Avenue to Harris Structural Steel Co., Plainfield, N. J.
- 1350 Tons, Brooklyn, Shore Parkway, contract MS39-14, to American Bridge Co., Pittsburgh.
- 1025 Tons, Philadelphia, hospital pavilions for University of Pennsylvania, to Ingalls Iron Works Co., Birmingham.
- 360 Tons, Brooklyn, Lieberman Brewery stock house addition, to American Bridge Co., Pittsburgh.
- 350 Tons, Duquesne, Pa., main building, for Linde Air Products Co., to American Bridge Co.
- 350 Tons, Ford City, Pa., Pittsburgh Plate Glass Co. tank building, to Pittsburgh Bridge & Iron Co., Pittsburgh.
- 310 Tons, Pittsburgh, incinerator, to Pittsburgh-Des Moines Steel Co., Pittsburgh.
- 305 Tons, Boston, cranes for Navy Yard, to R. C. Mahon Co., Detroit.
- 300 Tons, Newburgh, N. Y., alterations to Plaza Hotel, to Belmont Iron Works, Philadelphia.
- 200 Tons, Head Machine Co., Worcester, Mass., manufacturing unit, to R. C. Mahon Co., Detroit.
- 200 Tons, Brooklyn, two highway bridges, Greenpoint Avenue, to American Bridge Co., Pittsburgh.
- 175 Tons, Rome, N. Y., building for Rome Cable Co., to Syracuse Engineering Co., Syracuse, N. Y.
- 150 Tons, Newark, N. J., building for Episcopal Diocese of Newark, to Albert Smith & Sons, Newark.
- 150 Tons, Tobyhanna, Pa., State overpass, to American Bridge Co., Pittsburgh.
- 125 Tons, Boston, South End Boy's Club, to A. O. Wilson Structural Steel Co., Boston.
- 120 Tons, Troy, N. Y., Hosler-Trojan plant, to Lehigh Structural Steel Co., Allentown, Pa.
- 120 Tons, New York, foundation caissons, East River Drive, 54th-64th Streets, to Turl Engineering Works, Cortland, N. Y.
- 120 Tons, New York, chapter house for American Red Cross, to Bethlehem Steel Co., Bethlehem, Pa.
- 110 Tons, Jamaica, N. Y., housing development, to Empire City Iron Work, Long Island City, N. Y.
- 100 Tons, Brattleboro, Vt., beam spans, to Vermont Structural Steel Co., Burlington, Vt.

THE SOUTH

- 615 Tons, Portsmouth, Va., cranes for Navy Yard, to R. C. Mahon Co., Detroit.
- 300 Tons, Mobile, Ala., alterations to court house and customs house, to Ingalls Iron Works Co., Birmingham.
- 260 Tons, Red River County, Tex., bridge, to Mosher Steel Co., Dallas, Tex.
- 205 Tons, Pisgah Forest, N. C., warehouse building, to an unnamed bidder.
- 115 Tons, Selma and Urama, La., bridges for Missouri Pacific Railroad, to Missouri Bridge & Iron Co., St. Louis.

CENTRAL STATES

- 1250 Tons, Milwaukee, expansion, Milwaukee Electric Railway, Power & Light Co., to Milwaukee Bridge Co., Milwaukee.
- 400 Tons, Milwaukee, Broadway-Michigan Building repairs, to Milwaukee Bridge Co., Milwaukee.
- 375 Tons, Mansfield, Ohio, overhead conveyor bridge for Westinghouse Electric & Mfg. Co., to Mansfield Steel & Erection Co., Mansfield.
- 285 Tons, Chicago, loading shed, Montgomery Ward & Co., to Gage Structural Steel Co., Chicago.
- 250 Tons, Beaverton, Mich., bridge, to R. C. Mahon Co., Detroit.
- 180 Tons, Port Huron, Mich., Mueller Brass Co., factory extension, to Gabriel Steel Co., Detroit.
- 130 Tons, Crabtown, Iowa, truss spans, to Clinton Bridge Works, Clinton, Iowa.

- 110 Tons, Grant County, Wis., bridge, to Milwaukee Bridge Co., Milwaukee.
- 100 Tons, Barnes, Iowa, bridge, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

WESTERN STATES

- 500 Tons, Los Angeles, North American Aircraft buildings, to Bethlehem Steel Co., Los Angeles.
- 150 Tons, Oakland, Cal., Paraffine Co. additions, to Judson Pacific Co., San Francisco.

PENDING STRUCTURAL PROJECTS

NORTH ATLANTIC STATES

- 600 Tons, Long Island City, N. Y., warehouse for National Sugar Refining Co.
- 550 Tons, Albany, N. Y., bottling plant and office building for Beverwyck Breweries.
- 400 Tons, Newark, N. J., skating rink for Victor J. Brown.
- 400 Tons, State of Pennsylvania, several highway projects; bids close Oct. 13.
- 250 Tons, New Haven, Conn., Yale University library building.
- 200 Tons, Albany, N. Y., building for Samuel P. Herkowitz.
- 130 Tons, Londonberry, Vt., State bridge.
- 120 Tons, Ludlow, Mount Holly, Vt., State bridges.
- 120 Tons, Plainfield, N. J., extension to post office.
- 110 Tons, South Braintree, Mass.; plant addition, for Armstrong Cork Co.
- 110 Tons, Brooklyn, alterations, rack and wash house, for John F. Trommer.
- 100 Tons, Williamstown, Mass., theater.

THE SOUTH

- 650 Tons, Corpus Christi, Tex., Driscoll Hotel, for Mrs. Clara Driscoll.
- 400 Tons, Langley Field, Va., laboratory.

CENTRAL STATES

- 800 Tons, East Peoria, Ill., power house addition, for Central Illinois Light Co.
- 750 Tons, Conneaut, Ohio, rebuilding bridge No. 115.19; bids Oct. 14.
- 700 Tons, Savanna, Ill., powder and ammunition magazines; bids Oct. 12.
- 600 Tons, Brompton, Iowa, viaduct, for Milwaukee Road.
- 300 Tons, Thompson, N. D., Crookston, Minn., State bridge.
- 300 Tons, Mapleton, Iowa, viaduct, for Milwaukee Road.
- 225 Tons, Cincinnati, boiler house addition for procter & Gamble Co., H. K. Ferguson Co., general contractor (previously reported).
- 200 Tons, Minnesota City, Minn., State bridge No. 5793.
- 200 Tons, Medford, Minn., bridge, for Milwaukee Road.
- 200 Tons, Chicago, General Electric warehouse; bids Oct. 17.
- 150 Tons, Wood County, Ohio, State grade separation, Visintine Co., Columbus, only bidder.
- 120 Tons, Chicago, subway stations, Grand Avenue and State Street sections; bids Oct. 26.
- 188 Tons, Cleveland, store building in Shaker Heights.

WESTERN STATES

- 3200 Tons, Sitka and Kodiak Island, Alaska, Navy buildings; Turner Construction Co., New York, et al., general contractors.
- 1150 Tons, Los Angeles, First and Figueroa Streets grade separation; new bids Oct. 18.
- 1000 Tons, Albany, Cal., grandstand.
- 265 Tons, San Francisco, Southern Pacific storehouse.
- 260 Tons, Orleans, Cal., Klamath River bridge; bids Oct. 25.

FABRICATED PLATES

AWARDS

- 1860 Tons, Corpus Christi, Tex., welded steel tanks for Magnolia Petroleum Co., to Chicago Bridge & Iron Co., Chicago.

- 160 Tons, San Antonio, Tex., welded steel tanks for Magnolia Petroleum Co., to Chicago Bridge & Iron Co., Chicago.

SHEET PILING

AWARDS

- 300 Tons, Midland, Mich., Dow Chemical Co., plant, to Bethlehem Steel Co., Bethlehem, Pa.
- 246 Tons, Canadian, Tex., Sante Fe Railroad bridge, to Bethlehem Steel Co., Bethlehem, Pa.

PENDING PROJECTS

- 2500 Tons, Sitka and Kodiak Island, Alaska, Navy buildings; Turner Construction Co., New York, et al., general contractors.
- 450 Tons, Cleveland, cuts Nos. 4 and 9, Cuyahoga River straightening; L. A. Wells Construction Co., general contractor.
- 270 Tons, Lorain, Ohio, fender for Nickel Plate Railroad bridge.

New Zealand to Buy U. S. Highway Equipment

WASHINGTON—A broadened highway construction program in New Zealand is expected to increase demand for American road-building equipment, this year, a Commerce Department report says. New Zealand bought \$2,587,000 worth of American tractors in 1938, a 13 per cent increase over the previous year; \$511,291 worth of graders and parts, a 68 per cent increase; and \$320,620 worth of dredging and excavating machinery, a 100 per cent increase over 1937.

NLRB Certifies CIO Union In Western Pipe Plant

WASHINGTON—The Labor Board has announced certification of the Amalgamated Association of Iron, Steel and Tin Workers of North America, Lodge No. 2058, through Steel Workers Organizing Committee, as the sole collective bargaining agency selected by a majority of all production and maintenance employees, except machinists, of Western Pipe & Steel Co., of California, Vernon, Cal. The board's action was based upon secret ballot elections.

Netherlands Increases Export Restrictions

WASHINGTON—Special steels and alloys have been added to a long list of products requiring special export permits by the Netherlands Government. A cable from the American commercial attache to the Commerce Department also reports that ores, compressed gas cylinders, woodworking tools and machines, and rubber manufacturing machinery have been added to the list.

... NON-FERROUS ...

... Copper advances to 12.50c.; mild restrictions still in effect ... 73,870 tons of spelter sold in September; shipments were 69,424 tons ... Buying pressure moderates in lead market.

NEW YORK, Oct. 10.—Despite the recurring discussions of peace abroad, domestic consumers of non-ferrous metals apparently still face the future with considerable trepidation, and not content with having been able to place their fourth quarter needs on sellers' books, are endeavoring to build up plant inventories at a rapid pace to avoid the possibility of interference with production due to delays in the

delivery of raw materials. In the copper market there is still considerable unsatisfied demand, despite a slight relaxation of the restrictions imposed on sales by producers. On Wednesday one producer announced an increase of 1/2c. in prices to a basis of 12.50c. per lb., Connecticut Valley. On the following day all the other producers followed suit and quotations on various fabricated products were revised to the new level. Sales dropped

off considerably after the price rise, amounting to only 2800 tons over the week-end as compared with 11,153 tons on Thursday. In the resale market some business was done during the week in the range of 12.45c. to 12.50c., and there have been some sales for export at 12.50c., f.a.s.

Lead

Bookings of lead in the past week indicated a further moderating of demand, but were still in sufficient volume to enable more than one seller to dispose of his intake. Releases against existing commitments, however, are being received in unabated volume and are far in excess of actual consumption, indicating that many consumers are building up long neglected plant inventories. November is at present receiving most attention, with around 45 to 55 per cent of the month's needs already covered. Prices are unchanged at 5.50c. per lb., New York.

Zinc

Publication of the September statistics last week revealed that 73,870 tons of spelter was sold during the month, the highest monthly total on record. Of that total 6260 tons was for September delivery and 67,610 tons beyond, with the bulk of the metal being bought at an average price of 6.052c. per lb., East St. Louis. Shipments for September were 69,424 tons against 49,928 in August, and stocks at the end of the month stood at 95,615 tons.

September Average Prices

The average prices of the major non-ferrous metals in September, based on quotations appearing in THE IRON AGE, were as follows:

	Per lb.
Electrolytic copper, Conn Valley	11.93c.
Lake copper, Eastern delivery	11.95c.
Straits tin, spot, New York	Nominal
Zinc, East St. Louis	6.12c.
Zinc, New York	6.51c.
Lead, St. Louis	5.30c.
Lead, New York	5.45c.

Tin

The market was comparatively quiet last week, with only an occasional forward lot changing hands. Part of this lack of activity may be due to hesitancy of importers to offer futures because of the situation that has developed in the East. Apparently the tin producers there feel that the pound sterling 230 maximum price set by the control committee is not adequate for despite bids at that maximum figure they have practically ceased selling metal.

NON-FERROUS PRICES

Cents per lb. for early delivery

	Oct. 4	Oct. 5	Oct. 6	Oct. 7	Oct. 9	Oct. 10
Copper, Electrolytic ¹	12.00	12.50	12.50	12.50	12.50	12.50
Copper, Lake	12.00	12.50	12.50	12.50	12.50	12.50
Tin, Straits, New York	Nominally 55c. per lb.					
Zinc, East St. Louis ²	6.50	6.50	6.50	6.50	6.50	6.50
Lead, St. Louis ³	5.35	5.35	5.35	5.35	5.35	5.35

¹ Delivered Conn. Valley. Deduct 1/4c. from New York delivery. ² Add 0.39c. for New York delivery. ³ Add 0.15c. for New York delivery.

Warehouse Prices

Cents per lb., Delivered

	New York	Cleveland
Tin, Straits pig	57.00c.	57.00c.
Copper, Lake	13.50c.	13.625c.
Copper, electro	13.25c.	13.625c.
Copper, castings	12.875c.	13.375c.
*Copper sheets, hot-rolled	20.87c.	20.87c.
*Yellow brass sheets	19.06c.	19.06c.
*Seamless brass tubes	21.81c.	21.81c.
*Seamless copper tubes	21.37c.	21.37c.
*Yellow brass rods	14.36c.	14.36c.
Zinc slabs	8.75c.	8.125c.
Zinc sheets, No. 9 casks	12.00c.	12.10c.
Lead, American pig	6.50c.	6.125c.
Lead, bar	8.95c.	8.75c.
Lead, sheets, cut	8.50c.	8.50c.
Antimony, Asiatic	16.00c.	17.00c.
Alum., virgin, 99 per cent plus	21.50c.	22.50c.
Alum., No. 1 remelt., 98 to 99 per cent	19.00c.	19.50c.
Solder, 1/2 and 1/2	Nominal	Nominal
Babbitt metal, commercial grade	Nominal	Nominal

*These prices, which are also for delivery from Chicago warehouses, are quoted with the following percentages allowed off for extras: on copper sheets, 33 1/3; on brass sheets and rods, 40; on brass tubes, 33 1/3, and copper tubes, 40.

Old Metals

Cents per lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators. Selling prices are those charged to consumers after the metal has been prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	10.125c.	10.75c.
Copper, hvy. and wire	9.125c.	9.50c.
Copper, light and bottoms	8.125c.	8.625c.
Brass, heavy	5.50c.	6.00c.
Brass, light	4.625c.	5.375c.
Hvy. machine composition	9.25c.	10.125c.
No. 1 yel. brass turnings	5.25c.	5.75c.
No. 1 red brass or comp. turnings	9.125c.	9.625c.
Lead, heavy	4.375c.	4.75c.
Cast aluminum	8.50c.	9.50c.
Sheet aluminum	14.50c.	15.50c.
Zinc	3.125c.	4.375c.

Miscellaneous Non-Ferrous Prices

ALUMINUM, delivered: virgin, 99 per cent plus, 20c.-21c. a lb.; No. 12 remelt No. 2 standard, 19c.-19.50c. a lb. NICKEL, electrolytic, 35c.-36c. a lb. base refinery, lots of 2 tons or more. ANTIMONY, prompt: Asiatic, 14c. a lb., New York; American, 13c. a lb., f.o.b. smelter. QUICK-SILVER, \$150 per flask of 76 lb. BRASS INGOTS, commercial 85-5-5-5, 13.75c. a lb.

PLANT EXPANSION AND EQUIPMENT BUYING

◀ NORTH ATLANTIC ▶

General Electric Co., Schenectady, N. Y., has let general contract to Walbridge-Aldinger Co., 409 Griswold Street, Detroit, for one-story addition to factory branch, storage and distributing plant at Detroit. Cost over \$60,000 with equipment. Albert Kahn, Inc., New Center Building, Detroit, is architect and engineer.

American Can Co., 230 Park Avenue, New York, has let general contract to Lundoff-Bicknell Co., 100 North LaSalle Street, Chicago, for one-story addition to storage and distributing plant at 2300 West Sixty-first Street, Chicago, including improvements in present building. Cost over \$50,000 with equipment. C. G. Preis, first noted address, is company architect.

Signal Corps Procurement District, Army Base, Fifty-eighth Street and First Avenue, Brooklyn, asks bids until Oct. 16 for 15,000 ft. of cable and 15 reels (Circular 97); until Oct. 20, test sets, socket adapters, plug adapters, etc. (Circular 87), dynamotor units in lots of 20 to 80, and in lots of 200 to 700, with spare parts (Circular 88).

National Container Corp., Review Avenue, Long Island City, paper boxes and containers, has approved plans for expansion at paperboard mill at Jacksonville, Fla., including new recovery unit and equipment to increase plant capacity by about 20,000 tons per year. Cost over \$250,000 with machinery.

Commanding Officer, Ordnance Department, Watervliet Arsenal, Watervliet, N. Y., asks bids until Oct. 17 for one indexing or spacing attachment (Circular 155); until Oct. 19, power paper-cutting machine (Circular 150); until Oct. 30, mortars and mounts (Circular 122).

National Biscuit Co., 449 West Fourteenth Street, New York, plans installation of long, multiple-unit traveling ovens, conveyors, loaders, mechanical mixers, air-conditioning system and other equipment for straight-line production in new one-story baking plant, 400 x 1200 ft., on 32-acre tract at Atlanta, Ga., for which general contract was let recently to George A. Fuller Co., 597 Madison Avenue, New York. Plant will cost about \$3,000,000 with equipment, instead of smaller sum, previously noted. Louis Wirsching, Jr., first noted address, is company architect and engineer.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Oct. 20 for flexible metallic steam hose (Schedule 7315) for Brooklyn and Mare Island Navy yards; until Nov. 3, six gear motors and spare parts, and two stop emergency switches (Schedule 6985) for Philadelphia yard.

American Viscose Corp., 200 Madison Avenue, New York, cellulose rayon products, has approved plans for additions to branch mill at Front Royal, Va., forming a new production unit for rayon staple fiber. Work is scheduled to begin this fall. Cost reported over \$3,500,000 with machinery.

John F. Trommer, Inc., 1632 Bushwick Avenue, Brooklyn, has work under way on one-story addition to brewery for storage and distribution. Cost close to \$100,000 with equipment.

Wright Aeronautical Corp., 1120 East Nineteenth Street, Paterson, N. J., airplane engines and parts, has let general contract to Mahoney-Troast Co., 657 Main Avenue, Passaic, N. J., for one-story addition for expansion in foundry, storage and distribution. Cost close to \$45,000 with equipment.

Commanding Officer, Ordnance Department, Picatinny Arsenal, near Dover, N. J., asks bids until Oct. 16 for 150 multi-spur machine bits (Circular 447); until Oct. 17, two drill presses (Circular 453), one beading and flang-

ing power machine (Schedule 455), 516 high-speed twist drills and 600 gross of wood screws (Schedule 451), one squaring power shear (Schedule 454).

Public Service Electric & Gas Co., Public Service Terminal, Newark, N. J., has approved plans for expansion and improvements in steam-electric generating station at Marion, Jersey City, installation to include 50,000-kw. turbine-generator unit and accessories, two high-pressure boilers and auxiliary equipment. Extensions will be made in switch yard, high-tension lines and other distribution facilities. Cost about \$7,500,000.

Public Works Officer, Navy Yard, Philadelphia, asks bids until Nov. 1 for one-story aeronautical engine laboratory at naval aircraft factory at local navy yard (Specifications 9230), air-conditioning systems for naval aircraft factory (Specifications 9275).

Alpha Portland Cement Co., East Third Street, Easton, Pa., has let contract to Nicholson Co., 405 Lexington Avenue, New York, for expansion in storage facilities, including bin units and auxiliary equipment. Cost close to \$100,000.

Commanding Officer, Ordnance Department, Frankford Arsenal, Bridesburg, Philadelphia, asks bids until Oct. 18 for one motor-driven centerless grinder (Circular 427); until Oct. 20, four gas-fired annealing furnaces (Circular 434), four vertical presses (Circular 425).

◀ BUFFALO DISTRICT ▶

Eastman Kodak Co., Kodak Park, Rochester, N. Y., plans one and multi-story addition. Cost close to \$300,000 with equipment. Company also has let general contract to Ridge Construction Co., Kodak Park, for one-story addition to building No. 30. Cost about \$50,000 with equipment.

Elmira Coca-Cola Bottling Works, Inc., 411 West Second Street, Elmira, N. Y., Elmer T. Grove, president, plans one and two-story mechanical bottling plant, storage and distributing building, 50 x 130 ft., and 70 x 70 ft., at location noted. Cost over \$50,000 with equipment.

Rome Cable Corp., Ridge Street, Rome, N. Y., electrical cable and wire, has asked bids on general contract for one-story addition for storage and distribution. Cost close to \$50,000 with equipment.

◀ NEW ENGLAND ▶

Commanding Officer, Ordnance Department, Watertown Arsenal, Watertown, Mass., asks bids until Oct. 17 for two center-drive, double end boring mills (Circular 147).

Greenfield Tap & Die Corp., Greenfield, Mass., dies, taps, drills and other tools, has plans for one and two-story addition to plant No. 1, 75 x 160 ft., and 55 x 65 ft. respectively. Cost over \$65,000 with equipment. McClintock & Craig, 458 Bridge Street, Springfield, Mass., are architects and engineers.

Jelliffe Wire Works, Fairfield, Conn., wire goods, has let general contract to O. F. Burghart, Island Brook Avenue, Bridgeport, Conn., for second story addition, 59 x 60 ft., to present one-story plant unit. Cost close to \$40,000 with equipment.

Commanding Officer, Ordnance Department, Springfield Armory, Springfield, Mass., asks bids until Oct. 16 for nine punch presses (Circular 90).

Gevaert Co. of America, Inc., 423 West Fifty-fifth Street, New York, distributor of Belgian-made papers and films, has acquired mill property at Williamstown, Mass., and will remodel for manufacture of high-grade paper stocks under Belgium process. Cost over \$60,000 with equipment.

Massachusetts Gear & Tool Co., Woburn,

Mass., has awarded a contract to Hegeman-Harris, Boston, for a manufacturing unit and an addition and alterations to present plant.

General Ship & Engine Works, East Boston, has plans for a one-story ship fitter's shop. Thomas D. McInerney, care of Quincy Dry Dock & Yacht Corp., 108 Follett Street, Quincy, Mass., is architect.

◀ WASHINGTON DIST. ▶

Chemical Warfare Service, Edgewood Arsenal, Edgewood, Md., asks bids until Oct. 16 for one pipe and bolt threading machine, one drill machine, and three sets of high-speed dies (Circular 186).

Becker Pretzel Co., 2549 West Baltimore Street, Baltimore, has let general contract to E. Eyring & Sons Co., 808 South Conkling Street, for two-story and basement addition, 40 x 135 ft., to baking, storage and distributing plant. Cost over \$50,000 with traveling ovens, conveyors and other equipment.

Bureau of Yards and Docks, Navy Department, Washington, asks bids until Oct. 18 for soot blower elements, air compressor and receiver, automatic control equipment and piping for boiler plant at naval experimental model basin, Carderock, Md. (Specifications 9448); until Oct. 20, extensions in assembling building at naval station, Newport, R. I. Public Works Office at station in charge (Specifications 9334).

General Purchasing Officer, Panama Canal, Washington, asks bids until Oct. 16 for two gasoline engine-driven portable air compressors, 24 pneumatic chipping hammers, 300 chisel bits, one drill steel sharpener, shank grinder, pedestal grinder, oil furnace and six sets of broaching steels (Schedule 3653), 32 electric motor-driven sirens (Schedule 3655), motor-driven centrifugal-type oil purifier and oil purifier bowl (Schedule 3645); until Oct. 18, one gasoline engine-driven portable air compressor (Schedule 3647); until Oct. 19, one gasoline truck crane, six rocker dump cars, six scoop cars, 1005 ft. of track, pipe threading and cutting machine, wood-working, motor-driven saw (Schedule 3654).

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Oct. 17 for one tool room lathe (Schedule 7351) for Carderock, Md.; roller paths and steel rollers (Schedule 7393) for Washington yard; wire rope and seizing strand (Schedule 7314), brass, bronze, copper and steel wire (Schedule 7291) for Eastern and Western yards.

◀ SOUTH ATLANTIC ▶

Citizens Oil Co., Columbus, Ga., plans new bulk oil and gasoline storage and distributing plant near Seventh Street, Front Avenue and Chattahoochee River, comprising main one-story building, pumping station, steel storage tanks and other facilities. Cost about \$45,000.

Quartermaster, Fort Screven, Ga., asks bids until Oct. 24 for 150,000-gal. elevated steel tank, with piping and accessories (Circular 826-9).

Georgia Power Co., Atlanta, Ga., has approved plans for new steam-electric generating station at Macon, Ga., initial installation to include one 35,000-kw. turbine-generator unit, high-pressure boilers and auxiliaries. Provision will be made for two additional generating units of like capacity later. Company will make extensions in transmission and distributing lines in same area. Cost about \$4,000,000.

◀ SOUTH CENTRAL ▶

Standard Oil Co. of Louisiana, Inc., Baton Rouge, La., plans expansion and improvements in local oil refinery, including new production units, steel tank storage facilities, pumping equipment and other facilities. Cost close to \$2,500,000 with machinery. Company also plans new docks for handling bulk shipments, with tank storage and barge-loading facilities. Cost about \$1,000,000 with equipment.

Director of Purchases, Tennessee Valley Authority, Knoxville, Tenn., asks bids until Oct.

24 for carbon electrodes for Department of Chemical Engineering, Wilson Dam.

Coca-Cola Bottling Co., Shreveport, La., has let general contract to W. Murray Werner Co., First National Bank Building, for new one and two-story mechanical-bottling plant at Stoner Avenue and Coty Street, consisting of main two-story production and bottling works, one-story storage and distributing unit, and one-story shop with service and garage facilities for company trucks. Company will remove present plant on Market Street to new location. Cost about \$250,000 with equipment. Jesse M. Shelton, Bona Allen Building, Atlanta, Ga., is architect.

City Council, Gulfport, Miss., asks bids until Oct. 19 for one-story municipal building for equipment storage and distribution. Shrouds & Bean, Gulfport, are architects.

◀ SOUTHWEST ▶

Wagner Electric Corp., 6400 Plymouth Street, St. Louis, has let general contract to Hercules Construction Co., 8808 Ladue Road, Ladue Village, near St. Louis, for one-story addition, about 30,000 sq. ft. of floor space, for storage and distribution. Cost about \$80,000 with equipment.

State Building Commission, Edgar M. Egan, executive secretary, Bi-Partisan Advisory Board, Merchants' Bank Building, Jefferson City, Mo., asks bids until Oct. 20 for equipment for power plant at local auxiliary prison, including 300-hp. diesel engine-generating unit and accessory equipment. Cost about \$50,000; also bids for extensions and improvements in power plant at local State prison, including boiler house installation. Cost about \$110,000. Baumes Engineering Co., Railway Exchange Building, St. Louis, is consulting engineer.

City Council, Robstown, Tex., asks bids until Oct. 19 for extensions in municipal electric power plant, including natural gas diesel engine-generating unit of 700-hp. capacity, exciter, cooling tower with pumps and accessories, and other equipment. Garrett Engineering Co., 918 Richmond Avenue, Houston, Tex., is consulting engineer.

United States Engineer Office, Galveston, Tex., asks bids until Oct. 16 for one forced-draft oil burner system (Circular 97), cast iron valve castings (Circular 96), suction line castings (Circular 98), two retaining splint casting steel rings (Circular 99).

San Antonio Brewing Association, 312 James Street, San Antonio, Tex., has let general contract to F. A. Nunnally, 118 Delaware Street, for one-story addition, 55 x 195 ft., for new mechanical-bottling division, storage and distribution. Cost about \$50,000 with equipment. Leo M. J. Dielman, 145 North Street, is architect.

◀ WESTERN PA. DIST. ▶

American Bantam Co., Butler, Pa., small automobiles and parts, plans expansion and improvements, including additional equipment, for parts production and assembling units. Bond issue of \$1,000,000 has been authorized, considerable part of proceeds to be used for purpose noted. Francis H. Fenn is vice-president and general manager.

United States Engineer Office, New Post Office Building, Pittsburgh, asks bids until Oct. 27 for four welded slide gates, cast slide gates, four sets of welded conduit liners, and eight slide gate hydraulic hoist units for Loyahanna dam (Circular 255).

Talon, Inc., Arch Street, Meadville, Pa., metal slide fasteners, has let general contract to George A. Rutherford Co., 2725 Prospect Avenue, Cleveland, for three-story addition, 50 x 76 ft. Cost close to \$85,000 with equipment. Wilbur Watson Associates, Inc., 4614 Prospect Avenue, Cleveland, is architect and engineer.

◀ OHIO AND INDIANA ▶

Commercial Shearing & Stamping Co., Logan Boulevard, Youngstown, boiler and tank heads, heavy stampings, etc., has let general contract to E. P. Linberger, Youngstown, for

one-story addition, 95 x 280 ft. Cost over \$80,000 with equipment.

Goodyear Tire & Rubber Co., Akron, Ohio, has let general contract to Clemmer Construction Co., Akron, for new one-story plant, 100 x 500 ft., on 60-acre tract near St. Marys, Ohio, for production of mechanical rubber goods exclusively, with adjoining structures for machine shop, power substation and other divisions. Cost about \$1,000,000 with machinery. Another plant unit will be built later.

Tappan Stove Co., Wayne Street, Mansfield, Ohio, stoves, ranges and parts, has let general contract to Bauer Brothers, 40 Mansfield Avenue, for one-story addition, 80 x 170 ft. Cost close to \$50,000 with equipment.

Contracting Officer, Materiel Division, Air Corps, Wright Field, Dayton, Ohio, asks bids until Oct. 16 for running lamp assemblies, dome lamp and cockpit lamp assemblies, position lamps (Circular 336); until Oct. 17, landing lamp reflectors, housing, shield and hood assemblies, etc. (Circular 352); until Oct. 18, two accessory gear drives (Circular 338); until Oct. 19, drill presses and radial drills (Circular 343); until Oct. 20, magneto assemblies and distributor assemblies (Circular 349).

Schacht Rubber Mfg. Co., 238 Polk Street, Huntington, Ind., molded and hard rubber goods, etc., plans new three-story mill, 97 x 102 ft., at Noblesville, Ind., with one-story structure adjoining, 40 x 290 ft., for office and other operating service. Cost over \$70,000 with equipment.

◀ MICHIGAN DISTRICT ▶

Fruehauf Trailer Co., 10940 Harper Avenue, Detroit, motor trailers and parts, has let general contract to Collins Construction Co., Davidson Building, Kansas City, Mo., for one-story addition to branch works at Kansas City, 50 x 320 ft. Cost over \$100,000 with equipment. Richard H. Marr, 415 Brainard Street, Detroit, is architect.

Continental Motors Corp., Muskegon, Mich., gasoline engines and parts, plans one-story addition for an engine-testing and inspection department. Cost over \$50,000 with equipment.

Bohn Aluminum & Brass Corp., Lafayette Building, Detroit, brass and bronze castings and forgings, bronze bearings, etc., has let general contract to Kreighoff Co., 6661 French Road, for new one-story plant at Adrian, Mich., 200 x 320 ft. Cost over \$125,000 with equipment. Buckheit & Stuchell, Lafayette Building, Detroit, are architects.

◀ MIDDLE WEST ▶

Banner Mfg. Co., 1837 Clybourn Avenue, Chicago, automatic screw machinery, parts, etc., has asked bids on general contract for one-story and part basement addition, 75 x 110 ft. Cost over \$50,000 with equipment. E. L. Larson, 4814 North Damen Avenue, is architect.

Johnson Motors, Inc., Lake Front, Waukegon, Ill., outboard gasoline engines and parts, has let general contract to Campbell-Laurie-Lautermich Co., 400 West Madison Street, Chicago, for two-story addition, about 50,000 sq. ft. of floor space. Cost close to \$100,000 with equipment.

City Council, Estherville, Iowa, asks bids until Oct. 30 for expansion in municipal electric power plant, including new diesel engine unit, 1500 to 2000-hp. rating, and auxiliary equipment.

Texas Empire Co., Salem, Ill., plans new booster pumping station for pipe line service near Shelbyville, Ill. Cost over \$125,000 with pumping units and auxiliary equipment.

Belle Fourche Implement Co., Belle Fourche, S. D., agricultural implements and tools, plans one-story addition, 65 x 120 ft. Cost about \$40,000 with equipment.

Mason City Soy Bean Processing Co., 1203 West Twenty-second Street, Mason City, Iowa, Howard A. Miller, head, plans new soy bean tank units for storage and distribution. Cost close to \$40,000.

International Harvester Co., 180 North Michigan Avenue, Chicago, Motor Truck Division,

plans two-story factory branch, service and repair works at Toronto, Ont., about 45,000 sq. ft. of floor space, for Canadian subsidiary, International Harvester Co. of Canada, Ltd., Toronto. Cost close to \$175,000 with equipment.

John Deere Tractor Co., Waterloo, Iowa, farm tractors and parts, a subsidiary of Deere & Co., Inc., Moline, Ill., has asked bids on general contract for one-story addition. Cost close to \$40,000 with equipment.

◀ PACIFIC COAST ▶

Consolidated Aircraft Corp., 3302 Pacific Highway, San Diego, Cal., airplanes and parts, has leased about 17 acres of city-owned tide-water property for plant additions for expansion in parts production and assembling departments. Cost over \$350,000 with equipment. Edward Cray Taylor, 803 West Third Street, Los Angeles, is architect.

Public Works Officer, Naval Air Station, San Diego, asks bids until Oct. 24 for one overhead traveling electric bridge crane for local yard (Specifications 9435).

J. I. Case Co., State Street, Racine, Wis., agricultural implements, tools, etc., has let general contract to Drake, Wyman & Voss, Fenton Building, Portland, Ore., for new factory branch, storage and distributing plant at S. E. Market and Third Streets, Portland, consisting of main two-story unit, 100 x 204 ft., with one-story wing extension, 30 x 38 ft., for office. Cost close to \$85,000 with equipment. Frank J. Hoffman, Racine, is architect.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Oct. 20 for following motor-driven equipment for naval air station, Alameda, Cal.: Two milling machines (Schedule 7350), shearing machine (Schedule 7352), sheet metal forming and flanging machine (Schedule 7341), router (Schedule 7347), engine lathe (Schedule 7354), angle bending rolls (Schedule 7344), two hydraulic grinders (Schedule 7346), pneumatic drop hammer (Schedule 7345); until Oct. 24, vertical milling machine (Schedule 7366), two turret lathes (Schedule 7355), one engine lathe (Schedule 7359), two drilling and tapping machines (Schedule 7365), two engine lathes (Schedule 7360), one press brake (Schedule 7353), squaring shear (Schedule 7367), heavy-duty inclinable press (Schedule 7357).

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Oct. 20 for one horizontal milling machine (Schedule 7339), vertical broaching machine (Schedule 7340) for Keyport, Wash., yard; motor-driven milling machine (Schedule 7343) for San Diego, Cal., naval air station.

◀ FOREIGN ▶

Ministry of Supply and Development, Commonwealth of Australia, Canberra, New South Wales, has approved plans for new plant near Adelaide, South Australia, for production of small arms ammunition. Cost over \$600,000 with equipment.

Bathurst Power & Paper Co., Ltd., Sun Life Building, Montreal, newsprint, kraft paper stocks, etc., will take bids soon on general contract for one-story addition to mill at Bathurst, N. B. Cost close to \$500,000 with equipment.

Taylor Electric Co., Adelaide Street, London, Ont., electrical equipment, parts, etc., will begin work soon on two-story and basement addition, 50 x 70 ft. Cost close to \$50,000 with equipment. Watt & Blackwell, Victor Building, are architects.

Fray-Mershon, Inc., of Glendale, Cal., has announced that all advertising and merchandising of "All Angle" full universal milling machines and "All Angle" vises is now being done under the name of Fray Machine & Tool Co., Glendale. Fray-Mershon, Inc., has long been established as manufacturer and distributor of various sporting goods products and firearm accessories and will concentrate on this field. Fray-Mershon announces its retirement from the manufacturing and merchandising of all power and bench tools.

THIS WEEK'S MACHINE TOOL ACTIVITIES . . .

. . . Order pace steps up, first week in October, following record-breaking month . . . Military educational orders a large factor in current inquiry . . . Deliveries continue to advance . . . Price advances being posted on machines to be delivered after April 1, 1940, by an Eastern machine tool builder.

Cincinnati Builders Report No Let-Up in Demand

CINCINNATI—The war stimulated demand continues unabated in the Cincinnati area, machine tool manufacturers indicating that there has been practically no let-up in the improved demand which began early in September. Estimates of the effect of the war stimulus in this area in bringing about increased demand vary widely, the more conservative plants indicating that demand is at least 10 per cent better so far this month, while others indicate that the improvement approaches 50 per cent above preceding levels. The exact improvement in the September as compared to the August demand is also being held to conservative limit, but by and large the trade indicates that demand during the September period was better than 50 per cent above the August level. A large part of the improvement has been from domestic sources, since some of the foreign demand, with the beginning of hostilities, immediately dropped off. Domestic ordering for all types of tools from the smallest to the largest has expanded and shows prospects of continual expansion. France and England are most prominent on foreign orders, although there is reported to be some pending business for Russia, closing on which is imminent. Current business includes a number of multiple unit orders.

All of the current improvement is not yet reflected in factory operations which are now close to the 100 per cent mark. Some plants have not yet begun night shifts, but with scheduling of recent orders they indicate this will be inevitable. Of course, full expansion to meet the delivery requirements will be restricted by the availability of skilled labor. In some lines, manufacturers are indicating they are having difficulty in obtaining sufficient supply of skilled men, but others report they have not yet experienced difficulty in this regard.

September Best 1939 Month And Pace Continues

CHICAGO—Chicago machine tool sales agencies are reporting September as the best month of the year by far, in one case an improvement of 100 per cent being realized over the best previous month of 1939. Orders and inquiries received the first week of October are at the September rate, with no decrease yet in sight. September sales of small tools increased about 30 per cent over August. Most of the business now coming in is

from small buyers and could be classified as miscellaneous as few large lists are being bought. The Rock Island Arsenal, Electro-Motive Corp., and the International Harvester Co. are probably the three largest individual buyers. The arsenal ordered some lathes last week and has just taken bids on a number of horizontal boring mills and radial drills. Ordnance Department educational orders are being figured by several district manufacturers, and when and if contracts are signed, a quantity of planers, radial drills, milling machines and other equipment will be needed. Deliveries, of course, are becoming worse, and 12 to 14 weeks is considered good.

Orders Placed Now Were Initiated Before War Move

CLEVELAND—Production of machine tools continues at close to the limits of present available capacity here. A few makers have not yet added full third shifts, however.

Contrary to the impression held by some of the public, producers and sellers point out that practically all domestic orders placed in the past few weeks are propositions engineered and estimated before the war began. Foreign inquiry from nations previously inactive has been very strong recently, a development not fully anticipated by producers.

The opinion is now gaining ground in trade circles that even should the European war situation take a sudden turn, much of the business now on books has been placed for definite needs and that cessation of hostilities at this time would not alter rearmament by some nations.

Pace in New York Market Quickens as Deliveries Lengthen

NEW YORK—Following a record-breaking month of sales in September, the pace of machine tool sales has quickened during the first week of the month. One large program, involving millions, overshadows the general picture, but there is breadth and variety to the present demand. Several dealers have had the biggest week in their history. A great deal of the business has been initiated by Government contracts of one kind or other. The recent award by the Ordnance Department, U. S. Army, of a \$6,000,000 order for light tanks to the American Car & Foundry Co. presages more business of this kind to come. This particular company is currently buying equipment on which inquiries were made

while the tank job was still in the bid stage.

The tight delivery situation is placing an additional burden on the machine tool trade. Delivery schedules are being constantly checked with the factories by long distance telephone and quotations as to delivery are all subject to prompt acceptance. One large Eastern manufacturer is quoting a price advance of approximately 10 per cent on all machines delivered after April 1, 1940.

The Delaware, Lackawanna & Western Railroad has announced that it is in the market for about 20 machine tools for its locomotive and car repair shops. None of the other Eastern roads are actively inquiring for tools at present.

Detroit Firms Figuring On Government Business

DETROIT—First indications of machine tool business developing as a result of armament orders under the educational orders program has been noticed in Detroit in recent weeks. One auto parts division near Detroit is understood to have bid on production of machine guns for the Government and machine tool dealers have actually made proposals for this class of work. However, in all sizable types of equipment there continues to be more talk than inquiries, and more inquiries than orders. Smaller equipment and perishable tools continue to experience a heavy run, however. Quotations on delivery dates have lengthened perceptibly as plants report six to ten weeks work ahead of them on standard models of machines.

Heavy Government Buying Program in the East

BOSTON—The Government continues to buy metal working equipment freely for use in its New England armory, arsenal and navy yards. Following are some of the equipment recently purchased, and the companies from which purchase was made:

Five heavy duty lathes from Hendey Machine Co., Torrington, Conn.; a grinding machine from Heald Machine Co., Worcester, Mass.; a horizontal drilling machine and a horizontal boring, drilling and milling machine from Stedfast & Roulston, Inc., Boston; a grinding machine from Norton Co., Worcester; a rotary surface grinder from Arter Grinding Machine Co., Worcester; two horizontal boring, drilling and milling machines from Henry Prentiss & Co., New York; five engine lathes from Sidney Machine Tool Co., Sidney, Ohio; a tool grinding machine from Brown & Sharpe, Providence; a tapping machine from Bodine Corp., Bridgeport, Conn.; turret lathes from Jones & Lamson Machine Co., Springfield, Vt.; two universal iron workers from the Buffalo Forge Co., Buffalo; one upsetting forging machine from Austin-Hastings Co., Inc., Cambridge, Mass.; and two lots of gages from West & Dodge Thread Gage Co., Inc., Boston, and Greenfield Tap & Die Corp., Greenfield, Mass.

For the Springfield, Mass., Armory four thread milling machines, an automatic high speed production type hardness testing machine, four 12-in. geared head lathes; for the Watertown, Mass., Arsenal two horizontal table type boring mills; and for the Boston Navy Yard valve grinders, refacing machine and a grist of small hand tools will be placed shortly.

PRODUCTS INDEX

CHUCKS—Magnetic
Brown & Sharpe Mfg. Co., Providence, R. I.

Head Machine Co., Worcester, Mass.
Taft-Peiree Mfg. Co., The Woonsocket, R. I.

CLAMPS—Cable Strain
Efficiency Electric & Mfg. Co., East Palestine, Ohio.

CLAMPS—Rail Booster
Efficiency Electric & Mfg. Co., East Palestine, Ohio.

CLAMPS FOR FIXTURES
Detroit (Mich.) Stamping Co.

CLAY GUNS
Bailey, Wm. M. Co., Pittsburgh.

CLEANERS—Metal
American Chemical Paint Co., Ambler, Pa.
Detroit Rex Products Co., Detroit, Mich.
Ford, J. B., Sales Co., The Wyandotte, Mich.
Pennsylvania Salt Mfg. Co., Philadelphia, Pa.

CLEANING COMPOUNDS—Alkali
Detroit Rex Products Co., Detroit, Mich.
Pennsylvania Salt Mfg. Co., Philadelphia, Pa.

CLEANING EQUIPMENT—Metal
Detroit Rex Products Co., Detroit, Mich.

CLEANING EQUIPMENT (METAL)—Electro-Chemical
Bullard Co., The Bridgeport, Conn.

CLUTCH-BRAKES—Magnetic
Klekhaefer Corp., Cedarburg, Wisc.
Stearns Magnetic Mfg. Co., 635 So. 28th St., Milwaukee.

CLUTCHES
Falls Clutch & Mchry. Co., The, Cuyahoga Falls, Ohio.

Medart Co., The, St. Louis, Mo.

CLUTCHES—Friction
Dodge Mfg. Corp., Mishawaka, Ind.
Twin Disc Clutch Co., Racine, Wis.

CLUTCHES—Magnetic
Cutler-Hammer, Inc., Milwaukee.
Dings Magnetic Separator Co., 727 Smith St., Milwaukee.
Klekhaefer Corp., Cedarburg, Wisc.
Stearns Magnetic Mfg. Co., 635 So. 28th St., Milwaukee.

COAL
Cleveland-Cliffs Iron Co., The, Cleveland, Ohio.
Koppers Coal Co., The, Pittsburgh.
Pickands Mather Co., Cleveland.
Sojuzugleexport, Kallavskaja Ulitsa 5, Moscow 6, U. S. S. R.

COAL ORE & ASH HANDLING MACHINERY
Heyl & Patterson, Inc., Pittsburgh.
Link-Belt Co., 300 West Pershing Road, Chicago, Ill.

COBALT METAL
Central Trading Corp., 511 Fifth Ave., N. Y. C.

COILS—Lead
National Lead Co., 111 Bdw., N. Y. C.

COILS—Pipe
Harrisburg (Pa.) Steel Corp.

COKE—Metallurgical
Cleveland-Cliffs Iron Co., The, Cleveland, Ohio.
Pickands Mather & Co., Cleveland.

COKE OVEN MACHINERY
Atlas Car & Mfg. Co., The, Cleveland.
Koppers Co., Engineering & Construction Div., Pittsburgh.

COLD ROLL FORMING MACHINES
McKay Machine Co., The, Youngstown, Ohio.

COLLETS
Rivett Lathe & Grinder, Inc., Boston, Mass.

COLUMBIUM
Electro Metallurgical Sales Corp., 30 E. 42nd St., N. Y. C.

COMBUSTION CONTROLS
Brown Instrument Co., The, Philadelphia.
Leeds & Northrup Co., 4956 Stenton Ave., Philadelphia.

COMPOUNDS—Drawing
Morgan Construction Co., Worcester, Mass.

COMPOUNDS—Surface & Jet
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

COMPRESSORS—Air
Curtis Pneumatic Machinery Co., 1948 Kienlen Ave., St. Louis, Mo.
Westinghouse Air Brake Co., Industrial Div., Pittsburgh.

COMPRESSORS—Rebuilt. (See Clearing House Section)

CONDENSERS—Surface & Jet
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

CONDUITS—Flexible Metallic
Pennsylvania Flexible Metallic Tubing Co., Philadelphia.

CONTACTS—Electrical
Mallory, P. R., & Co., Inc., Indianapolis, Ind.

CONTRACTORS' SUPPLIES — Second-Hand. (See Clearing House Section)

CONTROL SYSTEMS—Temperature
Leeds & Northrup Co., 4956 Stenton Ave., Philadelphia.

CONTROLLERS—Crane
Clark Controller Co., The, Cleveland.
Cutler-Hammer, Inc., Milwaukee.
Electric Controller & Mfg. Co., The, Cleveland.

CONTROLLERS—Electric
Clark Controller Co., The, Cleveland.
Cutler-Hammer, Inc., Milwaukee.
Electric Controller & Mfg. Co., The, Cleveland.

CONTROLLERS—Valve, Electrically Operated
Brown Instrument Co., The, Philadelphia.
Cutler-Hammer, Inc., Milwaukee.
Leeds & Northrup Co., 4956 Stenton Ave., Philadelphia.

CONTROLS—Time Cycle
Koppers Co., Bartlett Hayward Div., Baltimore, Md.

CONVEYING AND ELEVATING MACHINERY
Farquhar, A. B., Co., Ltd., York, Pa.
Heyl & Patterson, Inc., Pittsburgh.
Link-Belt Co., 300 West Pershing Road, Chicago, Ill.

CONVEYOR WORMS
Lee Spring Co., Inc., 30 Main St., Brooklyn, N. Y.

CONVEYORS—Monorail
American Monorail Co., The, Cleveland.
Cleveland Tramrail Div. of The Cleveland Crane & Engng. Co., Wickliffe, Ohio.

CONVEYORS—Portable
Farquhar, A. B., Co., Ltd., York, Pa.

COPING MACHINES
Cleveland (Ohio) Punch & Shear Works Co., The.
Schatz Mfg. Co., The, Poughkeepsie, N. Y.

CORE OIL
Penola, Inc., Pittsburgh.
Sun Oil Co., Philadelphia.
Tide Water Associated Oil Co., 17 Battery Place, N. Y. C.

CORUNDUM WHEELS—See Grinding Wheels

COTTERS AND KEYS—Spring
Hindley Mfg. Co., Valley Falls, R. I.
Hubbard, M. D., Spring Co., 745 Central Ave., Pontiac, Mich.
Western Wire Prods. Co., St. Louis, Mo.

COUNTERBORES
Carbonyl Co., Inc., 11153 East 8-Mile Road, Detroit, Michigan.
Cleveland (Ohio) Twist Drill Co., The.
Ex-Cell-O Corp., 1192 Oakman Blvd., Detroit, Michigan.

COUNTERS—Production
Veeder-Root, Inc., Hartford, Ct.

COUNTING MACHINES
Veeder-Root, Inc., Hartford, Conn.

COUPLINGS—Flexible
American Flexible Coupling Co., Erie, Pa.
Crocker-Wheeler Electric Mfg. Co., Amherst, N. Y.

COUPLINGS—Pipe
Champion Machine & Forging Co., The, Cleveland, Ohio.
Harrisburg (Pa.) Steel Corp.
National Tube Co., (U. S. Steel Corp. Subsidiary), Pittsburgh.

CRANES—Crawling Tractor
American Hoist & Derrick Co., St. Paul, Minn.
Cullen-Friedstedt Co., 1303 S. Elkhorn Ave., Chicago.

CRANES—Electric
Armstrong, James P., Pittsburgh.
Cleveland Tramrail Div. of The Cleveland Crane & Engng. Co., Wickliffe, Ohio.
Conco Engineering Works, Div. of H. D. Conkey & Co., Mendota, Ill.

CRANES—Electric Traveling
Armstrong, James P., Pittsburgh.
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Conco Engineering Works, Div. of H. D. Conkey & Co., Mendota, Ill.

JUST BETWEEN US TWO

Ta Dah!

The editors have been prettying up the National Metal Show Number for the past several months. It is now standing in the wings, awaiting its cue, and next week will make its bow. Look for something extra helpful, handsome and hefty.

Look, Mr. Borah

The League of Nations, Quai Wilson, Geneva, Switzerland, a member of the one, big more or less happy family of readers of this journal, writes us to leave the Quai Wilson off the stencil hereafter.

This may be without significance, but we wonder how many Rue, Avenue, Place, and Boulevard Wilsons are left in Europe.

Call for Mr. Hoover

The U. S. Dept. of Justice, Washington, D. C., has not yet paid for the subscription it entered last June. Some night we will drop in at the Stork Club and slap a subpoena on Edgar Hoover.

Oops, Sorry!

Trepidly we echoed the claim that our sealed-beam headlamp story of Aug. 24 was a scoop. "Not so," says Burnham Finney, editor of our contemporary, *American Machinist*. And what is worse, he proves it by sending a clipping from his Aug. 23 issue. Our head is bowed, and our breast is black and blue.

Unkiana

And Ernest E. Thum, editor of another contemporary, *Metal Progress*, writes that we have barely scratched the "unk" family's hide. He contributes *hunk, sunk, junk, monk, bunk, spunk, slunk, skunk, stunk, and trunk*.

In addition there are *junk, chunk, drunk, and clunk*. That seems to complete the legitimate list, although "lunk," word heard frequently in W. 39th St., might be included. It is used in the sense of "a lunk time ago."

Orchid and Buttercup

To preserve our franchise it might be well to ring in a mention of your favorite family journal at this point, so here goes:

A New England manufacturer throws his native caution to the winds by remarking:

"I will take The Iron Age as long as I live or as long as I stay in business."

Contrast that shoot-the-works pledge with this Coolidgean observation by an officer of a "down East" technical school:

"We prefer it to most."

Bull'seye

As a candidate for the year's best headline we offer one the New York *World-Telegram* put on a London dispatch beginning, "The British Government advised Commons today that it was considering whether to restrict fox hunting." The headline was, "Sherman Was Right."

Gun Guards Girl

The gal in the Worth Steel ad on page 7 of last week's issue comes by her snooty look honestly. Her costume is so valuable that the photograph was made under armed guard. A week's pay, \$520, would buy you the dress, muff and hat, but the jewelry would set you back \$25,000.

The advertising agency whose artistic integrity forbade the use of Woolworth accessories is R. E. Lovekin Corp., Philadelphia.

Personal

McC—Thank you.

Puzzles

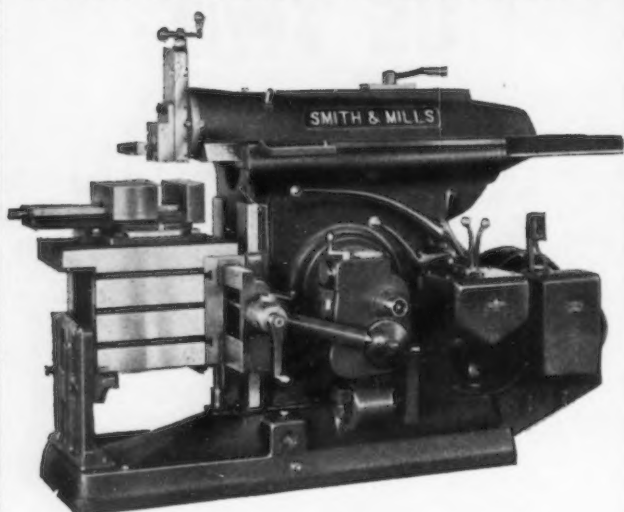
Last week's monkey hung on a 15 ft. rope.

If you can answer this correctly in three minutes without benefit of pencil and paper, buy yourself a PBK key:

Two tumblers stand side by side. One is half full of milk and the other is half full of water. A spoonful of milk is transferred to the tumbler of water. Then a spoonful of the mixture is transferred to the tumbler of milk. Which has lost more of its original content?

—A.H.D.

SMITH & MILLS SHAPERS



Automatic lubrication with filter and strainer. Multiple disc clutch and brake. Direct reading stroke and feed dials and quick changes are provided without stopping machine. Power rapid traverse to table cross feeds. Smith & Mills Shapers are made in sizes 12" to 32" stroke.

THE SMITH & MILLS CO.
CINCINNATI, OHIO

Strand
FLEXIBLE SHAFT MACHINES
N. A. STRAND AND COMPANY
6001 NO. WOLCOTT AVENUE CHICAGO, ILL.

HIGH QUALITY ONLY
1/8 to 3 H. P.
CAPACITIES

Famous for

—ACCURACY OF THREADS—LOW CHASER COST
—ALL AROUND DEPENDABILITY. Bulletins available: General Purpose Die Heads, Insert Chaser Die Heads, Threading Machines.

THE EASTERN MACHINE SCREW CORP.
21-41 BARCLAY ST., NEW HAVEN, CONN.
LOS ANGELES: A. C. Bebelinger, 313 Commercial St., SAN FRANCISCO: Guy Reynolds, 404 Vernon St., OAKLAND, CANADA: Arthur Jackson Mch. Tool Co., Toronto and Montreal.

H & G
DIE HEAD

See our Advts. page 212, Sept. 28, Iron Age

In these busy days The Iron Age is an indispensable source of information for manufacturers of all kinds of metal products. More such manufacturers read The Iron Age!

PRODUCTS INDEX

CRANES—Hand Power

American Monorail Co., The, Cleveland.
Cleveland Tramrail Div. of The Cleveland Crane & Engrng. Co., Wickliffe, Ohio.
Conco Engineering Works, Div. of H. D. Conkey & Co., Mendota, Ill.
Curtis Pneumatic Machinery Co., 1948 Kienlen Ave., St. Louis, Mo.
Euclid Crane & Hoist Co., The, Euclid, O.
Harnischfeger Corp., 4401 W. National Ave., Milwaukee.
Industrial Brownhoist Corp., Bay City, Mich.
Northern Engineering Works, Detroit.
Shaw-Box Crane & Hoist Div. Manning, Maxwell & Moore, Inc., 402 Broadway, Muskegon, Mich.
Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y.
Whiting Corp., Harvey, Ill.

CRANES—Jib

American Monorail Co., The, Cleveland.
Euclid Crane & Hoist Co., The, Euclid, O.
Shaw-Box Crane & Hoist Div. Manning, Maxwell & Moore, Inc., 402 Broadway, Muskegon, Mich.
Whiting Corp., Harvey, Ill.

CRANES—Locomotive

American Hoist & Derrick Co., St. Paul, Minn.
Cullen-Friedstedt Co., 1303 S. Kilbourn Ave., Chicago.
Harnischfeger Corp., 4401 W. National Ave., Milwaukee.
Industrial Brownhoist Corp., Bay City, Mich.
Link-Belt Co., 300 West Pershing Road, Chicago, Ill.
Ohio Locomotive Crane Co., The, Bucyrus, O.

CRANES—Monorail

American Monorail Co., The, Cleveland.
Cleveland Tramrail Div. of The Cleveland Crane & Engrng. Co., Wickliffe, Ohio.
Euclid Crane & Hoist Co., The, Euclid, O.
Northern Engineering Works, Detroit.
Shaw-Box Crane & Hoist Div. Manning, Maxwell & Moore, Inc., 402 Broadway, Muskegon, Mich.
Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y.

CRANES—Portable

Canton Fdry. & Mch. Co., Cleveland.
CRANES—Portable Electric
Baker-Raulung Co., The, 2175 W. 25th St., Cleveland.
Elwell-Parker Electric Co., The, Cleveland.

CRANKSHAFTS

Transue & Williams Steel Forging Corp., Alliance, Ohio.
Union Drawn Steel Div. Republic Steel Corp., Massillon, Ohio.

CRANKSHAFTS—Forged

Bay City Forge Co., Erie, Pa.
Econo Forge Co., Chicago, Ill.
Midvale Co., The, Nicetown, Phila., Pa.

CRUSHERS—Coal

American Pulverizer Co., 1439 Macklind Ave., St. Louis, Mo.

CRUSHERS—Steel Turning

American Pulverizer Co., 1439 Macklind Ave., St. Louis, Mo.

CUPOLA CHARGING EQUIPMENT

Lake Erie Engineering Corp., 68 Kenmore Sta., Buffalo, N. Y.

CUTTERS—Die Sinking

Pratt & Whitney Div. Niles-Bement-Pond Co., Hartford, Conn.
Tomkins-Johnson Co., The, Jackson, Mich.

CUTTERS—Keyseating

Davis Keyseater Co., 400 Exchange St., Rochester, N. Y.

CUTTERS—Milling

Barber-Colman Co., Rockford, Ill.
Brown & Sharpe Mfg. Co., Providence, R. I.
Carbidey Co., Inc., 1153 East 8-Mile Road, Detroit, Michigan.

Cleveland (Ohio) Twist Drill Co., The.
Morse Twist Drill & Mch. Co., New Bedford, Mass.

Pratt & Whitney Div. Niles-Bement-Pond Co., Hartford, Conn.
Standard Tool Co., Cleveland, Ohio.
Victor Machinery Exchange, 251 Centre St., N. Y. C.

CUTTING-OFF MACHINES—Abrasives

Tabor Mfg. Co., Phila.

CUTTING-OFF MACHINES—Cold Saw

Espen-Lucas Mch. Wks., Philadelphia.

CUTTING-OFF MACHINES—Pipe or Tubing

Aetna-Standard Engineering Co., The, Youngstown, Ohio.

Bardons & Oliver, Inc., Cleveland, Pa.
Landis Mch. Co., Inc., Waynesboro, Pa.

CUTTING AND WELDING APPARATUS

—Oxy-Acetylene—See Welding and Cutting Machines and Equipment—Oxy-Acetylene.

CYLINDERS—Compressed Air & Hydraulic

Hannifin Mfg. Co., Chicago.
Tomkins-Johnson Co., The, Jackson, Mich.

CYLINDERS—Seamless

Harrisburg (Pa.) Steel Corp.
Midvale Co., The, Nicetown, Phila., Pa.
National Tube Co. (U. S. Steel Corp. Subsidiary), Pittsburgh.

DEGREASING COMPOUNDS

Pennsylvania Salt Mfg. Co., Philadelphia, Pa.

DEGREASING MACHINES—Solvent

Detroit Rex Products Co., Detroit, Mich.

DEOXIDIZERS

Vanadium Corp. of America, 420 Lexington Ave., N. Y. C.

DESIGNING & DEVELOPING

Torrington (Conn.) Mfg. Co., The.

DIAMOND TOOLS

Bausch & Lomb Optical Co., Rochester, N. Y.

DICTATING MACHINES

Dietaphone Corp., 420 Lexington Ave., N. Y. C.

DIE BLOCKS—Drop Hammer

Heppenstall Co., Pittsburgh.
Kropp Forge Co., Chicago, Ill.

DIE CASTING MACHINES

Reed-Prentice Corp., Worcester, Mass.

DIE SINKING MACHINES—Automatic and Hand

Cincinnati (Ohio) Milling Mch. Co., The.
Pratt & Whitney Div., Niles-Bement-Pond Co., Hartford, Conn.

DIEING MACHINES—Automatic

Henry & Wright Mfg. Co., The, Hartford, Conn.

DIES, JIGS, FIXTURES, etc.

Barth Stamping & Mach. Wks., Cleveland.
Boyar-Schultz Corp., 2106 West Walnut St., Chicago, Ill.

Star Machine & Tool Co., Cleveland, Ohio.
Taft-Peirce Mfg. Co., The, Woonsocket, R. I.

DIES—Cast Tool Steel

Advance Foundry Co., The, Dayton, Ohio.
Detroit (Mich.) Alloy Steel Co.

DIES—Drawing & Sizing

Carbidey Co., Inc., 1153 East 8-Mile Road, Detroit, Michigan.

DIES—Pipe Threading

Acme Machinery Co., The, Cleveland.
Landis Mch. Co., Inc., Waynesboro, Pa.
National Acme Co., The, Cleveland.

DIES—Resistance Welding

Mallory, P. R., & Co., Inc., Indianapolis, Ind.

DIES—Screw and Thread Cutting

Acme Machinery Co., The, Cleveland.
Eastern Mach. Screw Corp., New Haven, Ct.

Geometric Tool Co., The, New Haven, Conn.
Greenfield (Mass.) Tap & Die Corp.

Jones & Lamson Mch. Co., Springfield, Vt.
Landis Mch. Co., Inc., Waynesboro, Pa.
National Acme Co., The, Cleveland.

DIES—Self-Opening Adjustable

Acme Machinery Co., The, Cleveland.
Consolidated Machine Tool Corp., Rochester, N. Y.

Eastern Mach. Screw Corp., New Haven, Ct.
Geometric Tool Co., The, New Haven, Conn.

Jones & Lamson Mch. Co., Springfield, Vt.
Landis Mch. Co., Inc., Waynesboro, Pa.
National Acme Co., The, Cleveland.

DIES—Sheet Metal Working

Cimatool Co., The, Dayton, Ohio.
Star Machine & Tool Co., Cleveland, Ohio.

Worcester (Mass.) Stamped Metal Co., 6 Hunt St.

DIES—Steel Letters and Stamps

Noble & Westbrook Mfg. Co., The, East Hartford, Ct.

DIESEL FUEL INJECTORS

Ex-Cell-O Corp., 1192 Oakman Blvd., Detroit, Michigan.

DOORS & SHUTTERS, Fireproof

Kinnear Mfg. Co., Columbus, Ohio.

DOORS & SHUTTERS—Steel or Wood

Rolling Kinnear Mfg. Co., Columbus, Ohio.

DRAW BENCHES

McKay Machine Co., The, Youngstown, Ohio.

DRAWN WORK—Metal—See Stampings or Drawings—Metal

DRILL HEADS—Hydraulic

National Automatic Tool Co., Richmond, Ind.

DRILL HEADS—Multiple

Baker Bros., Inc., Toledo, Ohio.

DRILLING MACHINES—Bench

Leland-Gifford Co., Worcester, Mass.

DRILLING MACHINES—Heavy Duty

Baker Bros., Inc., Toledo, Ohio.
Barnes Drill Co., 815-831 Chestnut St., Rockford, Ill.

DRILLING MACHINES—Multiple Spin-

dle Baker Bros., Inc., Toledo, Ohio.
Barnes Drill Co., 815-831 Chestnut St., Rockford, Ill.

Henry & Wright Mfg. Co., The, Hartford, Conn.
National Automatic Tool Co., Richmond, Ind.

DRILLING MACHINES—Multiple Spin-

dle Adjustable National Automatic Tool Co., Richmond, Ind.

DRILLING MACHINES—Multiple Spin-

dle Horizontal Baker Bros., Inc., Toledo, Ohio.
National Automatic Tool Co., Richmond, Ind.

DRILLING MACHINES—Portable Electric

Millers Falls Co., Greenfield, Mass.

DRILLING MACHINES—Portable Pne-

umatic Helwig Mfg. Co., St. Paul, Minn.
Warner & Swasey Co., The, Cleveland.